



**Ministry of Higher Education
Kabul University of Medical Sciences (KUMS)
Faculty of Allied Health Sciences**

**Curriculum and Course Contents of Bachelor of Science in
Anesthesia Technology Program**



First Revision 2017

Table of Content

1-Preference.....	III
2-Title of course.....	1
3-Developmental historyand general description.....	2
4-Goals for revision.....	2
5- Vision.....	2
6-PEO and PO.....	2
7-Medium of instruction.....	3
8-Duration of course.....	3
9- Eligibility for admission.....	3
10-Teaching /learning method.....	3
11- Branches of study.....	5
12-Credit guideline.....	6
13-Exam regulation.....	7
14-Number of credits in four categories7
15-General comparison of revised with original curriculum.....	13
16-Title of subjects according to each semester.....	13
17-First year syllabus.....	18
18- Second year syllabus.....	79
19-Third year syllabus.....	150
20- Fourth year.....	209

**Faculty of Allied Health Sciences
Curriculum and Course Contents
B.Sc.Anesthesia Technology**

Title of course

“BACHELOR OF SCIENCE inAnesthesia Technology”

Developmental history and general description of the program

Undergraduate program of Anesthesia Technology is exists in the list of undergraduate programs of many international universities. During its development this field is called with different titles asBachelor of Science in Anesthesia and Bachelor of Nurse of Anesthesia.

In the year of 2012 Allied Health science faculty was established within framework of Kabul University of Medical Sciences. Title of programs in Allied Health Science faculty is as follows:

- Bachelor of Science in Medical Laboratory Technology-B.Sc. (MLT)
- Bachelor of science in Anesthesia Technology
- Bachelor of Science in Radiology
- Bachelor of Science in Physiotherapy

As the success of health care system is dependent upon qualified personnel,so Allied health Science faculty of KUMS considers to have graduates in in the field of Anesthesia technologywho are efficient for improving health servicesand are able to serve as trained professionals for assisting anesthesiologist in the range of important tasks and be a vital member of anesthesia care teams typically in emergency and operating room. During Education in this field the students will be able to achieve the skills and knowledge and attitudes necessary for them as assistant of anesthesiologist beside these they will be able

to communicate effectively with patients and realize their society and its demands and build their further plans according to it.

This Curriculum is outcome based curriculum which is more feasible and applicable and provide preserve basic knowledge necessary for professional subjects, as an example according to this curriculum the students achieve primary knowledge of gases and drugs in physic and pharmacology before starting studying anesthesia in special surgery likewise before studying regional anesthesia and anesthesia of special surgery they achieve basic knowledge of surgery and neurosurgery.

Goals for Revision of Curriculum

- Prepare students to gain international standards.
- Assure that the students achieve the expected outcomes of Anesthesia technology course.
- Providing Standardize primary curriculum of Anesthesia technology according to society demand.
- Avoid duplications in different subjects and emphasize on professional subjects and internship program.

Vision

We are a Faculty of Anesthesia Technology respected nationally for our values-centered excellence in teaching, research, clinical care, and leadership. We are distinguished for preparing graduates who promote justice and achieve excellence in their chosen fields while demonstrating an extraordinary compassion and commitment to the service of others, and the Faculty of Anesthesia Technology is to be the golden benchmark for academic excellence in the country.

Program Educational Outcome (PEO)

After graduation the students will be able to:

1. Manage all standard necessity services for care of patient before anesthesia, during anesthesia and post anesthesia under supervision of anesthesiologist.
2. Improve and innovate assisting procedures.

3. Assist anesthesiologist to consider all necessities during anesthesia as possible side effects of drugs, controlling vital sign, fluid balance, monitoring equipment and antiseptic conditions.
4. To work effectively in post anesthesia care unit.
5. To work as a member of reanimation team.
6. Undertake their postgraduate program in this field (Master Degree and PhD).

Duration of Course

Duration of course is four academic years which consists of three and half year theory and practical works and 6 months for monograph and internship in surgery wards of different teaching hospitals.

Eligibility for Admissions

The candidates for this program is selected according to national high education entrance examination.

Eligibility for Graduation

The students will be graduated after completion of four year course which includes all credits of theory, practical works, internship and defense of monograph.

Teaching/Learning Methods

Active learning is the strategic approach in Faculty of Anesthesia Technology, That is, learners interact more with the subject matter to construct and own knowledge .They are not empty vessels into whom Faculty pour knowledge. Active learning activities promote thoughtful engagement, encourage analytical thinking and reasoning, foster the integration and application of knowledge, and are designed around well-defined learning objectives.

Students' engage in solving problems, sharing ideas, giving feedback, and teaching one another. Active learning requires Faculty who facilitate and emphasize the

development of students' skills. Active learning requires collaboration in both teaching (e.g., working teams of instructors, instructional designers, educational technology professionals, etc.) and learning (e.g., small groups). Active learning incorporate assessment as part of curriculum and instruction to ensure coherence and consistency. Active learning can enhance academic achievement ,promote retention and application of knowledge ,enhance understanding and mastery of course content, improve critical thinking and problem solving, improve clinical competence, enhance interpersonal skills, promoteteamwork, increase student engagement, promote positive student attitudes, increase course satisfaction, and encourage self-directed lifelong learning.

The following learning methods, taken in part from princes(2004) review of active learning research, provides the generally accepted definitions and uses of common active learning terms.

- **Active Learning**
- **Collaborative Learning**
- **Cooperative Learning**
- **Team-Based Learning(TBL)**
- **Case –Based Learning(CBL)**
- **Problem-Based Learning(PBL)**
- **E-Learning**

In brief our teaching – learning methodology fulfill by the following approaches’:

- **Lecture with Audio – Visual Aids;**
- **Laboratory practice;**
- **Small Group Tutorials(Problem Based Learning-PBL,Case Based Learning-CBL,etc);**
- **Role play (Simulated or Standard patient in the future);**
- **Bedside Learning(Clerkship and Rotations);**
- **Practice on Manikin and Moulage in Skill – Lab;**
- **Self – Learning (Learning to Learn)**
- **E- learning;**
- **Conferences;**

Branches of study: The course consists of both theory and practical works in the following subjects:

- 1. Islamic studies**
- 2. Foreign language**
- 3. Information technology**
- 4. Physics (mostly Gases)**
- 5. Medical Biology**
- 6. Genetics**
- 7. Chemistry (of gases and organic materials)**
- 8. Radiology**
- 9. Human Physiology**
- 10. Bacteriology**
- 11. Principle of Management**
- 12. Biophysics**
- 13. Human Anatomy**
- 14. Principles of Neurosurgery**
- 15. Basic Intensive Care**
- 16. General Biochemistry and Clinical Biochemistry**
- 17. Anesthesia for Special Surgery**
- 18. Hematology**
- 19. Pediatric Diseases related to Anesthesia**
- 20. Epidemiology**
- 21. Medical Ethics**
- 22. Immunology**
- 23. General Pathology and Systemic Pathology**
- 24. Reanimation**
- 25. Biostatistics**
- 26. Immunohematology**
- 27. Endocrinology**
- 28. Behavioral Science**
- 29. Occupational Health**
- 30. Toxicology**
- 31. First Aid**
- 32. Regional Anesthesia Techniques**
- 33. Pharmacology**
- 34. Basic Anesthesia techniques**
- 35. Internal Medicine (close related diseases to Anesthesia).**

- 36. Principles of Surgery
- 37. Principles of Anesthesia
- 38. Anesthesia for Pediatrics
- 39. Nutrition

Credit Hours Guidelines

Introduction:

Credit hour is the unit by which an institution measures its course work. The number of credit hours assigned to a course quantitatively reflects the outcomes expected, the mode of instruction, the amount of time spent in class, and the amount of outside preparatory work expected for the class.

A semester credit hour is the most commonly used system of measuring course work and is usually based on at least 14-17 weeks calendar (16 weeks in KUMS). Further, a class hour varies from 45 to 60 minutes (50 minutes in KUMS) in various institutions. Many of the definitions refer to weekly student class hours (WSCH).

Credits Guidelines

One semester credit hour is assigned in the following ratio of component hours per week devoted to the course of study;

A-Lectures

Normally, one theory credit hour is associated with class meeting for 50 minutes per week for an entire semester (16 weeks) or the equivalent 800 semester-minutes, excluding final examinations.

B-Laboratory Skills

One credit of laboratory work is equivalent to two study hours which is 100 minutes or 32 study hours in a semester.

One credit of internship is equivalent to three study hours or 150 minutes or 2.5 hours so for one semester (16 weeks), it is 40 hours (16x2.5). According to this students will complete one credit of internship when they work 40 hours in 16 weeks.

Totally B.Sc. Anesthesia Technology Program is 142 credits that are distributed in four (inclusive, essential, professional and monograph & internship) category, the percentage for each category is as follows:

- **University inclusive is 12.142%**
- **Essential subjects is 31.714%**
- **Professional is 47.142%**
- **Internship and monograph is 10%**

Exam regulations

1. Attendance:

Seventy five percent attendance in a subject for appearing in the examination

Is compulsory provided he /she has 80% attendance in non –lecture teaching. i.e. seminars, group discussion, tutorials, demonstration, practical's in health facilities (Primary, Secondary and Tertiary).

2. Internal Assessment

- **It shall be based on day-to-day assessment, evaluation of student assignment, preparation for seminar, clinical case presentation etc.**
- **Regular periodical examination shall be conducted throughout the course;**
- **Day-Today records should be given importance during internal assessment;**
- **Weightage for the internal assessment shall be 20% of the total marks in each subject.**

Some examples of internal assessment are as follows:

- **Preparation of subject for students seminars;**
- **Preparation of clinical case for discussion;**
- **Clinical case study/problem solving exercise;**
- **Proficiency in carrying out a practical or skill in small research project.**
- **Multiple choice question (MCQ) test after completion of a system course.**
- **Each item tested shall be objectively assessed and recorded;**

- Some of the items can be assigned as **Home Work /Vacation Work.**

3. University Examinations:

A-Theory paper; Will be prepared by the examiners as prescribed nature of questions will be short answer type/Objective type and marks for each part indicated separately.

B. Practical /Clinical; Will be conducted in the laboratories or hospital wards, Objective will be to assess proficiency in skills, conduct of experiment,interpretion of data and logical conclusion, Clinical cases should preferably include common disease not esoteric syndromes or rare disorders. Emphasis should be on candidates' capability in eliciting physical signs and their interpretation.

C-Viva /Oral; Includes evaluation of management approach and handling of emergencies student skills in interpretation of common investigation data, X-rays, identification of specimens, ECG, etc.

E-Rare Cases/Obscure Syndromes and long cases;

Shall not be put for final examination.

Techniques of Assessment and Evaluation:

- **Multiple choice Questions(MCQs)**
- **Extended Matching Questions(EMQs)**
- **Short Answer Questions(SAQ)**
- **Mini- Cases(MC)**
- **PBL or Tutorial Performance Assessment(PBL-TPA)**
- **Objectives Structured Clinical Examinations(OSCE)**
- **Traditional Clinical Examinations.**
- **Clinical Skills Learning Assessment(CSLA)**
- **Bedside Session Assessment(Logbook)**
- **Visits/Case Report Assessment.**

Examination and Marks distribution

Semester Examination Time Table:

- First Semester Final Examination Starting Date:6th July(15th Sara tan)
- Second Semester Final Examination Starting Date:20th December(1stJade)

Distribution of Marks:

A-Subject with practical course

1-Viva voce and Practical exam score total 40Marks includes:

- Practical **20 Marks**
- Viva voce **20 Marks**

2-Semester Final Exam (written paper): 60 Marks

Total End –Semester examination Score: 100 Marks

B-Subjects without practical course

1-Viva voce 20 Marks

2-Semester Final Exam (written paper) 20 Marks

Total End Semester Final Exam Score 100 MARKS

((Medicine is learned by the Bedside and not in the Classroom...See and then Research, Compare and Control.))

Dr William Oster

COURSE TITLE, CODE, CREDIT AND DISCIPLINES

No.	Category	Subjects	No. of Credits		No. of Hours		Sum of Credits	Sum of Hours	Pre-requisite
			Theory	Practice	Theory	Practice			
1	University inclusive	Islamic Studies	7		112		7	112	
2		Foreign Language		6		192	6	192	
3		Information Technology	1	3		128	4	128	
Total			8	9	112	320	17	432	
1	Essential subjects	Anatomy	4	4	64	128	8	192	
2		Medical biology	1	1	16	32	2	48	
3		Genetic	1		16		1	16	
4		Physics(GAS)	1	1	16	32	2	48	
5		Biophysics	1	1	16	32	2	48	
6		Physiology	3	2	48	64	5	112	
7		Chemistry(Gases and Organic materials)	2	1	32	32	3	64	
8		Principle of management	1		16		1	16	
9		Immunology	1	1	16	32	2	48	Physiology
10		Behavioral Sciences	1		16		1	16	
11		Epidemiology	1	1	16	32	2	48	
12		Medical Ethic	1		16		1	16	

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

13		Principles of Biochemistry	1	1	16	32	2	48	
14		Clinical Bacteriology	1	1	16	32	2	48	
15		Clinical Biochemistry	1	1	16	32	2	48	Fundamental of Biochemistry
16		Occupational Health	1		16		1	16	
17		Biostatistics	1	1	16	32	2	48	
18		Hematology	1	1	16	32	2	48	
19		Immunohematology	1	1	16	32	2	48	Hematology
20		Nitration	2		32		2	32	
TOTAL			27	18	496	576	45	978	
1	Professional sub	First Aid	2	2	32	64	4	96	
2	Subjects	Principles of Anesthesia	2	2	32	64	4	96	
3		General Pathology	1	1	16	32	2	48	
4		Systemic Pathology	3	3	48	96	6	144	
5		Regional Anesthetic Technique	1	2	16	64	3	80	
6		Pediatric Disease related to Anesthesia	1	1	16	32	2	96	

First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology

7		Pharmacology	3	2	48	64	5	112	Physiology and biochemistry
8		Basic Anesthetic Technique	2	2	32	64	4	96	-
9		Internal Medicine 1	2	1	32	32	3	64	-
10		Internal Medicine 2	2	1	32	32	3	64	-
11		Principles of Surgery	2	2	32	64	4	96	-
12		Principles of Neurosurgery	1	2	16	64	3	80	
13		Basic Intensive Care	2	2	32	64	4	96	
14		Toxicology	1	2	16	64	3	80	
15		Anesthesia for Special Surgery	2	3	32	96	5	128	
16		Pediatric Anesthesia	2	2	32	64	4	96	
17		Reanimation	1	2	16	64	3	80	
19		Radiology	1	1	16	32	2	48	
TOTAL			30	32	480	992	62	1552	

Categories of Subjects, number of Credits and its percentage for Medical Laboratory Technology program , Allied Sciences Health Faculty					
No.	Subjects	No. of Theory credits	No of practice credits	Total of credits	Percent of credits
1	Inclusive	8	9	17	12.142%
2	Essential Subjects	27	18	45	30.714%
3	Professional Subjects	32	34	62	47.142%
4	Internship	-	10	10	7.142%
5	Monograph	-	4	4	2.857%
Total		67 (46.428%)	75 (53.571%)	138	100%

General comparison of revised with previous curriculum

- **Subjects divided into four categories(inclusive, essential , professional and internship with monograph)**
- **Credits increased from 135 to 138**
- **Monograph is added with 4 credits.**
- **Internship period is scheduled with 10 credits in 20 weeks**
- **New subjects such as regional anesthetic technique, pediatric anesthesia, principles of neurosurgery, biostatistics, and principle of management are added.**
- **Pathophysiology and histopathology is omitted instead pathology, physiology is added.**
- **Percentage of practical works changed from 62 credits (45.925%) to 75 credits (53.571%).**
- **Inclusive subjects decreased from 22 credits to 17 credits.**
- **Essential and inclusive subjects are decreased from 65 credits to 60 credits and total credits of internal medicine subjects decreased from 12 credit to 8 credits.**

12. Title of subjects & hours of study according to each semester

Courses Title, Code, Credits and Disciplines								
Class: 1st.								
Semester: 1st.								
No.	Code No.	Subjects	No. of Credits		No. of Hours		Sum of Credits	Sum of Hours
			Theor y	Practi cal	Theor y	Practic al		
1	AT101	Islamic Studies	1		16		1	16
2	AT102	Foreign Language		2		64	2	64
3	AT103	Information Technology		2		64	2	64
4	AT104	Physics(Gas)	1	1	16	32	2	48
5	AT105	Medical biology	1	1	16	32	2	48
6	AT106	Genetic	1		16		1	16
7	AT107	Chemistry(Organic Material and Gases)	2	1	32	32	3	64
8	AT108	Anatomy1	2	2	32	64	4	96
	Total	Eight Subjects	8	9	128	288	17	416

Courses Title, Code, Credits and Disciplines								
Class: 1st.								
Semester: 2nd.								
No.	Code No.	Subjects	No. of Credits		No. of Hours		Sum of Credits	Sum of Hours
			Theor y	Practi cal	Theor y	Practic al		
1	AT209	Islamic Studies	1		16		1	16
2	AT210	Foreign Language		2		64	2	64
3	AT211	Information Technology		2		64	2	64
4	AT212	Physiology1	2	1	16	32	2	48
5	AT213	Immunology	1	1	16	32	2	48
6	AT214	Bacteriology	1	1	16	32	2	48
7	AT215	Biophysics	1	1	16	32	2	48
8	ML216	Anatomy2	2	2	32	64	4	96
	Total	Eight Subject	8	10	112	320	17	432

First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology

Courses Title, Code, Credits and Disciplines								
Class: 3 rd .								
Class: 2 nd .								
Semester: 5 th .								
Semester: 4 th .								
No.	Code No.	Subjects	No. of Credits		No. of Hours		Sum of Credits	Sum of Hours
			Theory	Practical	Theory	Practical		
1	AT333	Islamic studies	1		16		1	16
1	AT425	Islamic Studies	1		16		1	16
2	AT338	Foreign Language	2	1	32	32	3	64
3	AT319	Foreign Language	1	1	16	32	2	48
3	AT319	General pathology	1		16		1	16
3	AT335	Medical Ethics	1		16		1	16
4	AT320	biochemistry	1	1	16	32	2	48
4	AT320	biochemistry	1	1	16	32	2	48
5	AT428	immunology	1	1	16	32	2	48
5	AT321	Principle of pathology-1	2	2	32	64	4	96
6	AT320	Basic anesthetic first aid	2	2	32	64	4	96
7	AT323	pathology-2	1	1	32	32	2	64
7	AT323	Physiology-2	1	1	32	32	2	64
8	AT339	Internal Medicine1	2	1	32	32	3	64
8	AT324	Principle of surgery	1	2	16	64	3	80
	Total	Eight subjects	11	7	176	224	18	400
	Total	Eight Subjects	10	10	176	320	21	496

Courses Title, Code, Credits and Disciplines								
Class: 3 rd .								
Semester: 6 th .								
No.	Code No.	Subjects	No. of Credits		No. of Hours		Sum of Credits	Sum of Hours
			Theory	Practical	Theory	Practical		
1	AT641	Islamic studies	1		16		1	16
2	AT642	Behavioral Science	1		16		1	16
3	AT643	Pediatric disease related to anesthesia	1	1	16	64	3	80
4	AT644	Pharmacology(drug of anesthesia)	1	1	16	32	2	48
5	AT645	Epidemiology	1	1	16	32	2	48
6	AT646	Basic Intensive Care	2	2	32	64	4	96
7	AT647	Endocrinology	1	1	16	64	3	80
8	AT648	Nutrition	2		32		2	32
	Total	Eight subject	10	6	128	224	18	389

First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology

No	Code No	Subject	Theory credits	Practical credits	Sum of credits			
1	AT756	Monograph		4	4			
Semester: 7th.								
No.	Code No.	Subjects	No. of Credits		No. of Hours		Sum of Credits	Sum of Hours
			Theory	Practical	Theory	Practical		
1	AT749	Islamic studies	1		16		1	16
2	AT750	Regional Anesthetic Technique	1	2	16	64	4	80
3	AT751	Anesthesia for special surgery	2	3	32	96	5	128
4	AT752	occupational health	1		16		1	16
5	AT753	Toxicology	1	2	32	64	3	96
6	AT754	Principle of Neurosurgery	1	2	16	64	3	80
7	AT755	Biostatic	1	1	16	32	2	48
	Total	SEVEN Subjects	8	10	144	320	18	464

Courses for internship of Medical Laboratory Technology, Allied Health Sciences Faculty			
Class: 4th. Semester:8th			
Code No.	Subjects	Weeks	Credits
AT857	Reanimation	4 week	2
AT858	Regional Anesthetic Techniques	4 week	2
AT859	Anesthesia for Specialist Surgery	6 week	3
AT860	CSSD Procedure	2 week	1
AT861	Basic Intensive Care	4 week	2
Total	Five Subjects	20 week	10

Syllabus

First Year First Semester Islamic Studies

Goals:

The Islamic studies provides a basic and advanced information about Islam and his relationship with medicine in individual fields.

Learning objectives:

At the end of course the students well be able to:

- Explain basic information about Islamicstudies
- To understand regarding Islamiccivilization
- To perform prayers and other worships
- To enhance the skill of the students for understanding of issues related to faith and religious life.

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Self-directed study

Evaluation:

- | | | |
|------------------------------|-----|-----|
| • -Written final examination | 80% | |
| • - Med term examination | | 20% |

Source needed:

- Computer, video projector, whiteboard and marker.
- Islamic handbook.



ISLAMIC STUDIES			
Discipline		Religious	
Department		Islamic Studies	
Title		Basic concepts of Islamic Knowledge	
Pre-requisites		None	
Code		AT101	
Class		1	
Semester		Spring	
Credit	1	Theory	1
		Practical	
Weeks	Hours		Topics and description
	Theory	Practical	
1	1		Basic concept of Islamic Knowledge: General Information, Information about the Islamic Culture
2	1		Basic concept of Islamic Knowledge: Importance of Knowledge in Islam, Quran Verses and Hadith regarding Education.
3	1		Basic concept of Islamic Knowledge: Characteristics of Islamic Law, Quran Verses and Hadith regarding Inventions and changes in human life.
4	1		Memorization and translation of Surah 95 – 114
5	1		Daily Duaa (prayers) according to Hadith and Sunna
6	1		Daily Duaa (prayers) according to Hadith and Sunna
7	1		Daily Duaa (prayers) according to Hadith and Sunna
8	1		Basic concept of Islamic Knowledge: Characteristics of Islamic Law, Aim and Objective of Islamic Law
9	1		Basic concept of Islamic Knowledge: Aim and Objective of Islamic Law
10	1		Basic concept of Islamic Knowledge: Social main deviations
11	1		Definition, importance and ruling of Hijab in Islam : General information
12	1		Definition, importance and ruling of Hijab in Islam: Value and importance.
13	1		Definition, importance and ruling of Hijab in Islam :Concept of Virtue
14	1		Definition, importance and ruling of Hijab in Islam: Quran Verses and Hadith regarding Hijab.
15	1		Definition, importance and ruling of the Hijab in Islam: Islamic Rules regarding Makeup and women outgoing.

16	1	Definition, importance and ruling of the Hijab in Islam: Conditions for Hijab.
----	---	--------------------------------------------------------------------------------

References:

1.

English

Goals: -The medical laboratory students will be able to collect information in English from different sources such as internet and other available sources like

libraries...**Course description:**

This course is designed to enhance the oral communication skills of the students through discussion, and further improve their writing skills using a variety of nursing and non-nursing texts and appropriate of grammar and evaluate the student's development their listening, speaking, reading and writing skills relate to the nursing context. The focus is contextual grammar, summarization and presentation skills.

Learning Objectives

At the end of this course the student will be able to:

- Skills of speaking
- Reading
- Listening
- Writing

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self-directed study

Evaluation:

- -Written final examination 80%
- - Mid -term: (Attendance, discipline, class activity and Preparation – including answering oral questions, quiz, etc. 20%)

Source needed:

- Computer, video projector, whiteboard and marker.

English				
Discipline		English language		
Department		English department		
Title		ESP/Professional English & General English		
Pre-requisites		None		
Code		AT102		
Class		1		
Semester		Spring		
Credit	2	Theory	0	
		Practical	2	
Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1		2	Health and illness	Speaking: asking about health, sickness and recovery Reading .Read the passages silently and then aloud listening .listen to the pronunciation of the words in the cassette. Writing and home works: Write an advice about how to keep fit. Gr .The alphabets ,vowels and consonants
2		2	Parts of the body 1	Speaking; Name the parts of your body. Reading ;read the passages

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

				<p>Grammar: Parts of speech / noun, pronoun, adjective Listening listen to the pronunciations of the given words. Writing : homework assignment</p>
3		2	Parts of the body 2	<p>Speaking: talk about the organs which are in the trunk. Reading ;Read these texts silently Grammar: present simple tense, auxiliary verbs Listening; listen to someone who is talking to a doctor.</p>
4		2	Function of the body	<p>Speaking :Talk about the radiate of pains in the body Reading : read these lines silently Medical English: eating , the five sense Grammar: present simple , aux verb, pronouns Writing ;Write about your family ,</p>
5		2	Medical practitioner	<p>Speaking: Medical English: specialist, choosing a specialty. Grammar: introductory sub/there is / there are Listening ;listen two persons are talking about their friends Home work :Write a short paragraph about doctors</p>
6		2	Nurses	<p>Speaking ;talk about the nurses grades,/ the nurse role Reading :read silently /read aloud Grammar: there is / there are/ plural of nouns. Listening ‘listen to these words pronunciation by a native.</p>
7		2	Allied health professionals	<p>Speaking; talking about technician jobs in the hospital. Reading ;read these lines Listening :listen to this dialog</p>

				Grammar: countable and uncountable nouns
8		2	Hospitals	Speaking: talk about inpatients and outpatients. Grammar: countable and uncountable nouns Reading :read about a hospital1 Listening :listen to the cassette Writing .Homework assignment
9		2	Primary care	Speaking. Talk about National Health Service in your country. Reading :read these texts silently Grammar: Modal axe, (can,will,may) Writing. Home work is given.
10		2	Medical Education	Speaking .talk about medical qualification. Grammar: Modal auxiliary. Reading .read the given text Writing .write a short PH about medical education in your country.
11		2	Medical Education2	Speaking .talking about the different subject which are taught in medical college Grammar: past simple. Writing .write about junior doctors in Afghanistan
12		2	The oversea doctors	Speaking: talk about types of registration. Grammar: past simple, question and negation. Reading .read the given text Writing .write a paragraph about education abroad
13		2	Signs	Speaking .speak about the symptoms and signs of a sickness. Read: read the given passage aloud. Listening :listen to the cassette

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

14		2	Symptoms	Speaking: talking about symptoms and signs of a patient Grammar: past continuous, interrogative and negation. Listening :listen to these words and repeat after the cassette Writing :write a paragraph about Malaria
15		2	Blood	Speaking .talk about the circulation of blood in the body Reading .read these texts about blood. Grammar: present and past progressive tenses comparing. Writing .write a paragraph about role of blood I the body
16		2	Review	Review: solve the problems of the students/quizzes/test And final examination

Text Books:

1. Glendenning .H.E. & Howard .R, (2007), *Professional English in use*. Cambridge: Cambridge university press.
2. English grammar by Betty Scamper, 3rd edition

Information Technology

Goals:-On completion of first module, the delegate will understand what is meant by the terms: Hardware,Software,Information networks such as the Internet, Information and Communications Technologies (ICT), Health & Safety and Environmental considerations, Computer Security,

Course description:

This non-clinical course is designed to augment the computer skills required in clinical and scholastic settings. Students will study computer applications in nursing education and practice. Students will acquire skills in using basic applications such as word processors, spreadsheets, databases, presentation software, and communication packages.

Learning objectives

At the end of this course the students will be able to:-

- Copyright and data protection.
- Work with files and folders.
- Choose built-in options, such as the Help function, recognise good practice in choosing.
- Adjust document page settings.
- , Check and correct spelling before finally printing documents.

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Role play
- Self-directed study

Evaluation:

- -Written final examination 60%
- - Skills examination 20%
- - Mid -term: (Attendance, discipline, class activity and Preparation – including answering oral questions, quiz, etc. 20%

Source needed:

- Computer, video projector, whiteboard and marker Equipped educational biochemistry lab
- Practical information technology handbook (prepared by related department)

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

Discipline			Computer	
Department			ICT(Information Communication Technology)	
Title			ICDL Module 1 & 3 (Concepts of Information and Communication Technology , Word-processing)	
Pre-requisites			None	
Code			AT103	
Class			1	
Semester			Spring	
Credit		2	Theory	
			Practical	
			2	
Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1		2	Concepts and Hardware	Concepts: Personal Computer(Laptop & Palmtop Computers, Futures of Handheld Portable digital devices, PDA, Mobile Phones, Media Players, Smart Phones) Parts Of Computer (The CPU, Memory, ROM-BIOS, Disks)
2		2	Input/output ports And Computer Performance	Input/output ports: USB Port, Serial Port, Parallel Port, Network Port, FireWire Port. Computer Performance: Factors affecting performance(CPU Clock Speed, RAM size, Hard disk, Free hard disk space, Fragmentation, De-fragmenting files, Multitasking Considerations, CPU Speeds).
3		2	Memory And Storage	Memory: RAM, ROM, ROM-BIOS, Video (Graphics) Memory,

				<p>Measurement of storage capacity, Measurement of storage capacity. Types of Storage Media: Internal Hard Disk, CDs, DVDs, Recordable CDs and DVDs, USB flash drives, Memory Cards, Network Drives & Online File Storage, Floppy Disks.</p>
4		2	<p>Input devices & Output Devices</p>	<p>Input Devices: Keyboard, Mouse, Scanners, Tracker balls Touch Pads, Joysticks, Webcams Digital Cameras, Microphones. Output devices: Traditional Computer Monitors, Flat Screen Computer Screens, Projection Devices, Speakers And Headphones, Printers, Type of Printers, Laser Printers, Inkjet Printers, Dot Matrix Printers Input and Output devices.</p>
5		2	<p>Software</p>	<p>Operating System: Example Of Software Application are: Word Processing Application Spreadsheets Application Databases Application Presentations Application E-mailing Application Web browsers Application Photo editing Application</p>
6		2	<p>Software</p>	<p>Software: Difference between operating systems and application software , Accessibility options Voice recognition Software Screen Reader Software Screen magnifier Software On-Screen Keyboard</p>
7		2	<p>Networks And DATA Transfer</p>	<p>Network: Network Types (LAN, WAN, WAN, Client/server network, Internet, WWW, Intranet, Extranet)</p>

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

				DATA Transfer: Downloading from and uploading to a network Broadband versus Dial-up Internet connection services Internet connection Options Features of Internet connection.
8		2	ICT in Everyday Life	ICT in Electronic World ICT in Communication ICT in Virtual Communities ICT in Health ICT in Environment
9		2	Security	Security: Identity and Authentication, Password policies, Off-site backups, Firewalls, Data theft Issues, Viruses, computer Virus (Computer Virus infection Issue, Protecting Against Computer Virus infection, What to do if you discover a virus on your Computer, The limitation of antivirus Software).
10		2	Legal Issue And Site Licenses	Legal Issue: Copyright, Copyright Issue when Copying files. Site Licenses End-user license agreement, Types of software licence agreements, Shareware, Freeware, Open source software, Open source software, Data protection, Data protection and Privacy, Data protection Legislation
11		2	A first look at windows	Starting Windows Viewing your 'computer details' The Start button The Start menu Running a program using the Start menu Shutting down Windows
12		2	The windows desktop	What is the Windows Desktop? Desktop icons Windows Taskbar Taskbar clock Customizing your Desktop

				<p>Modify the computer date and time Setting the computer keyboard language and other regional settings</p>
13		2	Files, folders and disks	<p>What are files? What are folders? Types of drive and drive letters Manipulating folders Manipulating files Copying and moving files File compression Online Storage</p>
14		2	The Microsoft Word Screen & Starting To Use Microsoft Word	<p>Working with Documents: Starting Microsoft Word The Microsoft word Screen The Office Button, Ribbon Tabs Switching between tabs using the mouse wheel Groups Using the default Microsoft Word document: Saving Microsoft Word Document Saving your file using a different file name Using Help within Microsoft Word Alt key help Saving document using different formats</p>
15		2	Paragraph Formatting	<p>Paragraph Formatting : What is paragraph Formatting? Paragraph marks Aligning text Indenting paragraphs</p>
16		2	Page Formatting	<p>What is page formatting? Page Orientation and paper size Changing the page size Page Margins Inserting Page break Header and Footer Page numbering Cover Pages</p>

Reference:

www.ecdl.org

http://www.ecdl.org/programmes/ecdl_icdl

<http://www.ecdl.org/programmes/word-processing>

Physics

Goal:--The aims to understand the laws of matter, principles of light and optic and principles of sound, Work mechanism of different lab instruments.

Course description

This course provides conceptually-based exposure to the fundamental principles and processes of the physical world. Topics include basic concepts of motion, forces, energy, heat, electricity, magnetism, and the structure of matter and the universe. Upon completion...

Learning Objectives

The students should be able to:

- Understand the fundamentals of physics
- To understand the radioactivity

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self-directed study

Evaluation:

- | | |
|-------------------------------|-----|
| • - Written final examination | 60% |
| • - Skills lab examination | 20% |

- - Mid -term: (Attendance, discipline, class activity and 20% Preparation - including answering oral questions, quiz, etc.

Source needed:

- Computer, video projector, whiteboard and marker.
- Equipped educational physic lab.

Physics				
Discipline		Basic Science		
Department		Physic		
Title		General physic		
Pre-requisites		None		
Code		AT104		
Class		1		
Semester		Spring		
Credit 2		Theory	1	
		Practical	1	
Weeks	Hour		Titles	Description
	Theory	Practical		
1	1	1	Balance physical and chemical balance	Sensitivity of balance use and care of the balance
2	1	1	Measurements	mass-volume- specific gravity- units and measurements- properties of matter
3	1	1	Properties of matter	viscosity of both fluids- diffusion and osmosis dynamics- motion- types centripetal force and centrifugal force

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

4	1	1	Application centrifuge	Application centrifuge principle and parts Applications in medicine preventive maintenance PH meter parts and principle cell counter- basic principle Differential centrifugation,
5	1	1	Basic concept of quantity of heat	Definition and measurement of above concept of temperature thermometry Thermostat, thermocouple relevant to clinical laboratory
6	1	1	Thermal capacity	Thermal capacity specific heat capacity, calorimetric techniques calorific values of food and fuel kinetic theory of gases- assumption
7	1	1	Laws of thermodynamics	Applications laws of thermodynamics water bath- parts, care and usage Incubator-parts, preventive maintenance and use of refrigerators techniques.
8	1	1	Elisa reader	familiar with the system, Application of micro plate reader, Principles of Operation, Necessary means to carry out the ELISA technique, Equipment needed to perform the ELISA tests, Biochemical steps ELISA technique, Installation of equipment, Calibration Elisa reader, Maintain common.
9	1	1	Light and optics	While light color spectrum wavelength frequency dispersion reflection refraction critical angle- total internal reflection
10	1	1	Lasers	Lasers- types- focal length- magnification power- spherical and chromatic aberrations- filters- spectrometer- principle and parts- applications microscopes.
11	1	1	Types of microscopes	Types of microscopes- simple- compound- phase contrast- polarizing- fluorescent- dark field- electron microscope- parts and care of the microscope

12	1	1	Sound	Production and propagation- velocity wave length frequency- ultrasound- properties and problems and application in clinical field.
13	1	1	Review of electricity and electronics: Electricity	Determination of power, energy, AC and DC current- resistance- volts,- ohm's law- cycles- earthing- fuse transformers
14	1	1	Electrolytes application in medicine	Types- tum ratio- transformers and stabilizers- uninterrupted power supply (UPS)- electrolysis- basic concept. Electrolytes application in medicine, distillation apparatus parts and principle
15	1	1	Medical electronics	Medical electronics semiconductors- principle of diodes- rectifiers- oscillators- photoelectric emission integrated circuits.
16	1	1	Radioactivity Blood indicator	Basic of radioactivity decay constant decay series- artificial radioactivity- radioisotopes used in medicine Blood indicator (Gamma chamber)- detectors- non chamber- GM count scintillation

Text Books:

- 1- Hand book of biomedical instrumentation RSKhandpur.
- 2-Laboratory instrumentation (Sheaf and William).

Medical Biology

Goals:-The aims of this subject is understanding all basic and advanced information about cell structure,all organelles and their structure functions.

Course discription:

A medical biology degree prepare you for a career in human medicine,dentistry,biochemecal research,biotechnology,or one of other health professiones like physical therapy,it provides sfoundation in biology at the molecular,cellular,tissue,organ,and organismal levels.

Learning Objectives:

Students will be able to know:-

- Transfer of different molecules across the membrane.
- Membrane proteins, structure and function of DNA and RNA.
- genetic system of mitochondria and its genes.

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self-directed study

Evaluation:

- - Written final examination 60%
- - Skills lab examination 20%
- - Mid -term: (Attendance, discipline, class activity and Preparation - including answering oral questions, quiz, etc. 20%

Source needed:

- Computer, video projector, whiteboard and marker.
- Equipped educational biology lab.

Discipline					Basic Science	
Department					Biology	
Title					Biology	
Pre-requisites					Biology	
Code					ML105	
Class					1	
Semester					Spring	
Credit 2					Theory	1
					Practical	1
Weeks	Hours		Topics	Descriptions		
	Theory	Practical				
1	1	1	Biological membrane	Cell membrane, membrane lipids, phospholipids; cholesterol and glycopospholipids, Change in phospholipids cause some disease		
2	1	1	Membrane proteins	Peripheral and integral proteins		
3	1	1	Membrane proteins organization	Different structure of membrane protein		
4	1	1	Water molecules movement across the membrane	Osmosis, simple diffusion, active transport and ion channels		
5	1	1	Cytoskeleton	Microfilaments, actins, tropomyosin, teryonin and tropomoduline.		

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

6	1	1	Cytoskeleton	Types of muscles, Cardiac muscles, skeletal muscles and smooth muscles
7	1	1	Microtubules	axonal microtubules, Structure and function
8	1	1	Organelles	Nucleus, nucleolus, Structure and function
9	1	1	Endoplasmicreticulam	Structure, function, RER and SER
10	1	1	Golgi	Structure and function
11	1	1	Lysosome	Enzyme and their secretion
12	1	1	Endocytosis, Endosome and lysosome	Structure and function
13	1	1	Mitochondria	ATP ,oxidative phosphorylation, Structure, function and Genetics system of mitochondria Diseases and mutation of mtDNA.
14	1	1	Paroxysms	Structure and function

15	1	1	Cell division	Mitosis and Meiosis,
16	1	1	Nucleic acid	DNA, RNA, (rRNA, tDNA, mRNA) and their functions

Text Books:

- 1-Medical cell Biology, Third Edition, 2008
- 2-Molecular biology, Third Edition, 2010
- 3-Cell biology, Third Edition, 2012
- 4-The Cell, third edition, 2007

Genetic

Goals: -Medical genetic is rapidly advanced field of medicine.it is now recognized that genetic mechanisms play a fundamental role in the pathogenesis and treatment of disease and in the maintenance of health. Thiscourse is designed to provide an overview of human genetic concepts and clinical disorders that have a genetic component.

Course description:

In this course, students will learn genomic structure, genes regulation, laws of heredity and mechanisms to create genetic diseases in order to detect and prevent diseases especially in nursing care.

Learning Objectives

- The students should be able to:-
- - The structure of DNA and RNN
 -
 - Mutation and Clinical Cytogenetic
 - Abnormalitiesand Sex chromosome Aneuploidy

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

- Role play
- Self-directed study

Evaluation:

- - Written final examination 60%
- - Skills lab examination 20%
- - Mid -term: (Attendance, discipline, class activity and Preparation - including answering oral questions, quiz, etc. 20%)

Source needed:

- Computer, video projector, whiteboard and marker.
- Genetic handbook.

Genetic				
Discipline		Basic Science		
Department		Biology		
Title		Genetic		
Pre-requisites		Biology		
Code		AT106		
Class		1		
Semester		Spring		
Credit 1		Theory		1
		Practical		
Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1	1		Basic structure and function of Gene and chromosome	The Genetic code, Clinical commentary, Osteogenesis Imperfect a Type of DNA,
2	1		Genetic variation	The origin and Detection, type of Mutation

3	1		Molecular consequence of mutation	The hemoglobin disorders, sickle cell Diseases, Thalassemia
4	1		Cause of Mutation	The effects of Radiation on mutation rates, XerodermaPigment sum
5	1		Blood groups	The ABO blood groups, Rh System
6	1		Detecting variation at the DNA level	Southern Blotching and restriction fragment analysis, Single nucleotide polymorphisms
7	1		Autosomal dominant and recessive Inheritance	Greg or Mendel's Contribution, The concept of phenotype, Cystic Fibrosis, Postaxial polydactyl
8	1		Autosomal Recessive inheritance	Characteristic, Achondoplasia
9	1		New Mutation	Germ lineMysticism, retinoblastoma, Huntington disease, Neurofibromatosis
10	1		Pleiotropic	Mar fan Syndrome, and example
11	1		Sex-linked and nontraditional mode of inheritance	X inactivation, Hemophilia A, Duchene Muscular dystrophy
12	1		Mitochondrial inheritance	Genetic imprinting
13	1		The fragile x Story	Structure and Types
14	1		Clinical Cytogenetic	Human disease
15	1		Abnormalities	Polyploidy, Down Syndrome, trisomy 18
16	1		Sex chromosome Aneuploidy	Monosomy, XX Males, XY Females, Trisomy X, 47XYY Syndrome

Text Books:

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

1. Essential of Medical Genetics (Ferguson) latest edition.
2. Emery, S Element or medical Genetic. Latest
3. Molecular Genetics (G.H.SACK), Latest Edition.

Chemistry

Goals:-The aims of this subject is understanding the basic structure of atoms, ions and molecules, and way to quantitatively describe the properties of atoms and molecules. The concepts of chemical equilibrium, and the energies that drive chemical reaction. an introduction to the field of thermodynamics.

Course description:

General chemistry is a one semester course designed to provide survey of inorganic and physical chemistry and an introduction to organic chemistry for allied health majors.

Learning Objectives

The students should be able to:-

- Explain the electronic structure of atom.
- Geometrical structure of molecules.
- Units of concentration, osmotic pressure
- Acid and base and organic compounds.

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self-directed study

Evaluation:

- - Written final examination 60%
- - Skills lab examination 20%
- - Mid -term: (Attendance, discipline, class activity and Preparation - including answering oral questions, quiz, etc. 20%)

Source needed:

- Computer, video projector, whiteboard and marker.

- Chemistry handbook.

Chemistry				
Discipline		Basic Science		
Department		Chemistry		
Title		Organic and Nonorganic Chemistry		
Pre –requisites		None		
Code		AT107		
Class		1		
Semester		Spring		
Credit 3		Theory		2
		Practical		1
Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1	2	1	Introduction and description of atom	Chemistry, material, composition of material, structure of material chemical characteristics of matter and Physical characteristics of matter, element. Structure of atom, electron, proton, nucleus of atom, mass of atom, mass of molecule, isotope, isotone and isobar.
2	2	1	Electronic structure of atom	radiation, electro magnetism, micro mechanism, wave mechanism, kouantamy numbers, Orbitals filling, Hound Law , kind of elements

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

3	2	1	Electronic structure of atom	Geometrical shape of molecule: molecular orbit, sigma, relation and pi relation
4	2	1	Solution, Gases and liquids	Contents of solution. Density of solutions, molar solution, mole solution, normal solution
5	2	1	Gas, Liquid	Gases solvency in liquids Liquid solvency liquids
6	2	1	Osmotic pressure	Osmosis, diffusion, freezing point, boiling points,
7	2	1		Isotonic solution, Hypertonic solution, hypotonic solution
8	2	1	Acid base	Ampholyte, pH quantity as active acid, physiological action ions
9	2	1	Acid – base	Hydrolysis, Buffers solution, pH-buffer of dilution: buffers and density on buffers pH,
10	2	1	Acid-base	Buffer of organic systems: acidic and basic state of the blood buffer characteristics of amino acid
11	2	1	The first Law of thermodynamic and law number two	free energy of Gibbs entropy of thermochemistry, theory of Hess

12	2	1	Radioactivity	Constant equivalence degree , constant pressure , radio activity elements artificial radio- activity usage radio – active substance , nuclear process
13	2	1	Classification of organic compounds	Definition ,alkanes, nomination of isomers space structure, chemical and physical characteristics of hydrocarbons ,alkanes, isomeric alkanes and their nomination dines , trans E,Z
14	aduate2	1	Aromatic compounds	benzene and its components , physical and chemicalcharatristic of benzene , naphtha Linn, Halogens anthracite and their characteristic processes of halogens and multi nuclear compounds SN,SN1,SN2 ,E1,E2
15	2	1	Alcohols	primary, secondary and tertiary alcohols multi valued alcohols, chemical and physical characteristics of alcohols , phenol ,aldehyde eater tiolsketone and their structures :
16	2	1	Organic amino acids	Obsorbsion adsorption organic acid : carbocyclic· UV,IR,NMR

Text Books:

1-Organic chemistry Morrison-Boyed.Latest edition.

2-Analytical chemistry (Skoog- West) latest edition.

Anatomy

Goals:-The broad goals of teaching of graduate students in anatomy are to providing comprehensive knowledge of the gross structure of human body to provide basis for the clinical correlation of organs or structures involved and anatomical for the disease presentations.

Course description:

The course introduces students to the structures and functions of the human body in order to provide them with a better understanding of anatomy and for integration into theoretical and clinical anesthesia practice.

Learning Objectives:

At the end of course the students well be able to: -

- Comprehensions the normal gross structure and position of all body organs.
- Comprehend the connections and relationships between the all parts of the body.

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self-directed study

Evaluation:

- - Written final examination 60%
- - Skills lab examination 20%
- - Mid -term: (Attendance, discipline, class activity and Preparation - including answering oral questions, quiz, etc. 20%)

Source needed:

- Computer, video projector, whiteboard and marker.
- Equipped educational anatomy lab.

Anatomy

Discipline		Aesthesia	
Department		Anatomy	
Title		Anatomy1	
Pre-requisites		None	
Code		AT108	
Class		1	
Semester		Spring	
Credit	4	Practical	2
		Theoretical	2
Weeks	Hours		Topics and Descriptions
	Theory	Practice	
1	1	1	PART EIGHT- THE HEAD & NECK Head and Neck Compartments
2	1	1	Meninges The Cranial nerves: The olfactory nerve, The optic nerve The Coulometer nerve, The Trochlear nerve
3	1	1	Brain & its Blood supply Dural venous sinuses
4	1	1	The trigeminal nerve, the Abdu cent nerve The facial nerve, the vestibule-cochlear nerve & The Glossopharyngeal nerve
5	1	1	The vogues nerve, the accessory nerve, & The hypoglossal nerve The Face Parotid Gland
6	1	1	The Orbits: Conjunctiva, & the Lacrimal apparatus The Eyeball
7	1	1	The Ear: External Ear The Tympanic membrane Middle Ear Internal Ear

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

			The Temporal mandibular joint
8	1	1	Temporal fossa Infratemporal fossa
9	1	1	The Neck Anterior Triangle of the neck: Muscles
10	1	1	Thyroid & Parathyroid glands Posterior Triangle of the neck: Muscles, Vessels & Nerves
11	1	1	Pharynx Larynx
12	1	1	Nasal cavities External nose The oral cavity: Walls, & the tongue
13	1	1	Salivary glands Parotid Gland
14	1	1	The Teeth & Gingivae PART NINE- THE CENTRAL NERVOUS SYSTEM Introduction to the central nervous system The Spinal Cord
15	1	1	Gross anatomy of the Brainstem Gross anatomy of the Cerebellum Gross anatomy of the Cerebral Hemispheres: Poles, surfaces & borders Lobes
16	1	1	Medial surface of the cerebral hemisphere The Ventricles of the brain, and the Cerebrospinal Fluid

17	1	1	Basic Anatomy Descriptive Anatomical Terms Basic Structures: Muscles & Joints
18	1	1	Basic Structures: Ligaments, Blood vessels, Nervous system, Mucous membranes, Serous membranes, Bones
19	1	1	PART ONE- THE HUMAN OSTEOLOGY Bones of the Upper Limb Bones of the Lower Limb
20	1	1	The Vertebral Column Structure of a typical vertebrae The Sacrum & Coccyx The Sternum & Ribs
21	1	1	The Skull: General Review The skull as seen from the front: The Orbits The skull as seen from above The skull as seen from behind The skull as seen from the lateral side
22	1	1	The skull as seen from below The cranial fossae Foramina of the skull
23	1	1	The nasal cavity & par nasal sinuses The Fontanelles The mandible The hyoid bone
24	1	1	PART TWO- THE BACK Back musculature PART THREE- THE UPPER EXTREMITY The Pectoral Region
25	1	1	The Scapular region, The Arm The Forearm & Hand Nerves of the free upper limb
26	1	1	Joints of the Upper Limb PART FOUR- THE LOWER EXTREMITY The Gluteal region The front & medial side of the thigh

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

27	1	1	The Back of Thigh The Front and Lateral side of the Leg The back of the leg Nerves of the lower limb: The Lumbar Plexus
28	1	1	Joints of the lower limb PART FIVE- THE THORAX Introduction to the thorax
29	1	1	The Thoracic Cavity Trachea, Bronchi, Lungs & Pleurae The Heart & Pericardium Conducting System of the heart
30	1	1	Other structures in the Mediastinum & Thoracic cavity Lymph nodes of the Thorax Surface Anatomy of the Thorax
31	1	1	PART SIX- THE ABDOMEN Introduction to the abdomen Extent of the abdominal cavity Regions of the abdomen
32	1	1	Review of structures within the abdomen- the remaining part Abdominal viscera: esophagus, stomach, small intestine, large intestine, liver, extra-hepatic biliary apparatus, the pancreas, the spleen, the kidneys, ureters & the suprarenal glands

References:

1.Gray's anatomy of medical students.

**First Year
Second Semester
Islamic Studies**

Goals: -The Islamic studies provides a basic and advanced information about Islam and his relationship with medicine in individual fields.

Learning objectives:

At the end of course the students well be able to:-

- Explain basic information about Islamic studies
- To understand of the students regarding Islamic civilization
- To perform prayers and other worships

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self-directed study

Evaluation:

- - Written final examination 80%
- - Mid -term: (Attendance, discipline, class activity and Preparation - including answering oral questions, quiz, etc. 20%

Source needed:

- Computer, video projector, whiteboard and marker.
- Islamic handbook.

Islamic Studies	
Discipline	Religious
Department	Islamic Studies

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

Title		Faith	
Pre-requisites		None	
Code		AT209	
Class		1	
Semester		Fall	
Credit 1		Theory	1
		Practical	
Weeks	Hours		Titles and Descriptions
	Theory	Practical	
1	1		Faith : General Information regarding Taw heed
2	1		Faith: Types of Taw heed, Pillars of Taw heed.
3	1		Faith: Conditions of Taw heed, advantages of Taw heed.
4	1		Faith: General information about Shark
5	1		Faith: Types of Shark
6	1		Faith: Islamic Rules for Shark and Mushrek
7	1		Faith: Tawasul (To solicit)
8	1		Faith: belief in Qaza and Quadra, Allah's prophets, books, angels and day of Judgments.
9	1		Tajweed
10	1		Tajweed
11	1		Tajweed
12	1		Memorization and translation of Surah 85 – 94
13	1		Memorization and translation of Surah 85 – 94
14	1		Memorization and translation of Surah 85 – 94
15	1		Special Duaa (prayers) according to Hadith and Sunna
16	1		Special Duaa (prayers) according to Hadith and Sunna

References:

1.

English

Goals: -The medical laboratory students will be able to collect information in English from different sources such as internet and other available sources like libraries...

Course description:

This course is designed to enhance the oral communication skills of the students through discussion, and further improve their writing skills using a variety of nursing and non-nursing texts and appropriate of grammar and evaluate the student's development their listening, speaking, reading and writing skills relate to the nursing context. The focus is contextual grammar, summarization and presentation skills.

Learning Objectives

At the end of this course the student will be able to:

- Translate from their native language to English and from English to Dari or Pashto.
- .Our focus in the second semester is to stress on medical English or ESP

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self-directed study

Evaluation:

- - Written final examination 60%
- - Mid -term: (Attendance, discipline, class activity and 20% Preparation - including answering oral questions, quiz, etc.

Source needed:

- Computer, video projector, whiteboard and marker.
- English handbook.

English

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

Discipline			English language	
Department			English department	
Title			ESP/Professional English & General English	
Pre-requisites			None	
Code			AT210	
Class			1	
Semester			Fall	
Credit 2			Theory	0
			Practical	2
Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1		2	How are Illnesses and Infection Spread?	Speaking; students identify how illnesses are spread by reading a text and summarize the text orally in three minutes. Listening; listen to new words pronunciation and identify their meaning. Grammar: present continuous ,/ verb /transitive intransitive verbs
2		2	Bones	Looks .Talking about similarities between family member Bones :fracture s/treatment of bone Grammar: present continuous, auxiliary verb /main verb. Reality; talking about dreams and reality Childhood: milestone /coeliac disease Grammar; :future form , would like , reading ,
3		2	The endocrine system	Reality; talking about dreams and reality The endocrine system :goiter/ a referral letter of a patient Grammar; :future form , would like , regular and irregular verbs
4		2	The eye	Things. Talking about lost property. The eye :examination of the eye, retinopathy Grammar; comparative and superlative adj.
5		2	The gastrointestinal system	Things. talking about lost property The gastrointestinal system /abdominal quadrants Grammar; comparative and superlative adj.

6		2	Gynecology	Energy ; talking about daily activities , gynecology ; menstruation Grammar; Adv. of frequency , How often Energy ; talking about daily activities , The heart and circulation Grammar ; Frequency expression , How often
7		2	The heart and circulation part 2	Dotcom. : talking about website The heart and circulation part 2 Grammar. Present perfect .tense / have and has as auxiliary verb
8		2	Infections	Dotcom. : talking about website Infections :fever , source of infection Grammar. Present perfect. question and negative sentences
9		2	Mental illness	Drive ; talking about drives to work Mental illness :neurotic disorders Grammar. Question form , WHAT+NOUN ,
10		2	The nervous system	Drive ; talking about drives to work The nervous system Grammar. Question form , WHAT+NOUN ,
11		2	The nervous system 2	Justice :talking about revenge ,writing a story , The nervous system 2 Grammar :Punctuation ,past con ,
12		2	Oncology	Speaking: talking about neoplasms Reading: read the text on sign and symptom of malignancy Writing: how to treat a tumor by the information the text.
13		2	Pregnancy	Extreme :talking about nature Pregnancy and childbirth / labor presentation and lie Grammar :Active voice and passive voice
14		2	Review	Review. troubleshooting quizzes
15		2	Hepatitis A	Reading: Read the text ‘Hepatitis A’ and underline its sign and how it transmits to the people from the text.

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

				<p>Grammar: present continuous ,/ verb /transitive intransitive</p> <p>Writing: students write two ways of treatment for Hepatitis A in their own words.</p>
16		2	Alzheimer Disease	<p>Speaking: what is ‘Alzheimer Disease’</p> <p>Reading: Read the following text ‘Alzheimer Disease’ and try to find appropriate answers for the given question.</p> <p>Grammar: present continuous, auxiliary verb /main verb.</p>

Text Books:

- 1-Glendinning .H.E. & Howard .R, (2007), Professional English in use. Cambridge:
- 2Cambridge university press
- 3-English grammar by Betty Scamper, 3rd edition
- 4-Essential grammar in use by Raymond Murphy, 3rd edition, 2007
- 5-New Inter change book one, by Jack C Richards, students text book, 2008

Information Technology

Goals: -On completion of fourth module, the delegate will understand to create edit and save spread sheet, Enter data into cells; use good practice in creating lists Select, sort and copy, move and delete data Edit rows and columns in a worksheet Copy, move, delete, and appropriately rename worksheets Create mathematical and logical formulas using standard spreadsheet functions; use good practice in formula creation.

Course description:

This non-clinical course is designed to augment the computer skills required in clinical and scholastic settings. Students will study computer applications in nursing education and practice. Students will acquire skills in using basic applications such as word processors, spreadsheets, databases, presentation software, and communication packages.

Learning Objectives

On completion of sixth module the candidate will be able to:

- Work with presentations and save them in different file formats,

- Choose built-in options, such as the Help function, within the application to enhance productivity,
- Understand different presentation views and when to use them; choose different slide layouts and designs, Apply animation and transition

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self-directed study

Evaluation:

- - Written final examination 60%
- - Skills lab examination 20%
- - Mid -term: (Attendance, discipline, class activity and Preparation – including answering oral questions, quiz, etc. 20%)

Source needed:

- Computer, video projector, whiteboard and marker.
- Computer lab.
- Practical information technology handbook (prepared by related department).

Computer	
Discipline	Computer

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

Department			ICT(Information Communication Technology)	
Title			ICDL Module 4 & 6 (Spread Sheet, Presentation)	
Pre-requisites			None	
Code			AT211	
Class			1	
Semester			Fall	
Credit 2			Theory	2
			Practical	
Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1		2	A First look at excel	Starting the excel program What is active cell The excel referencing system Entering numbers and text Default text and number alignment Summing a column of numbers Entering a date Worksheets and workbooks Selection techniques
2		2	Manipulating Rows and Columns Manipulating Cells and Cell contents	Manipulating Rows and Columns: Inserting rows and columns into a worksheet Deleting rows and columns within a worksheet Modifying columns widths and heights Automatically resizing the column width to fit contents Manipulating Cells and Cell contents: Copying a cell or range contents within a workbook Deleting cell contents

				<p>Editing cell content AutoFill Copying a data range using AutoFill Sorting a cell range</p>
3		2	<p>Worksheets Formatting Freezing Row and Column Titles</p>	<p>Worksheets: Switching between worksheets Renaming, inserting, Deleting, Copying, Moving a worksheet Formatting: Alignment Formatting (Aligning Contents in a cell range, Centering a title over a cell range, Cell Orientation, Text wrapping) Number formatting (decimal point display, currency symbol, date styles, percentages) Freezing: Freezing row and column titles</p>
4		2	<p>Formula</p>	<p>Formula: Creating formulas Copying formulas Operators Using operator in formulas Formula error messages</p>
5		2	<p>Functions</p>	<p>What is a function Common functions (Sum, Average, Max, Min, Count, Count A, Count Blank, Round and If functions)</p>
6		2	<p>Charts</p>	<p>Charts: Inserting(column chart, line chart, bar chart, pie chart) Resizing a chart) Deleting a chart Chart title or labels</p>
7		2	<p>Charts</p>	<p>Charts: Changing the chart background colour Changing the column, bar, line or pie slice colours in chart Modifying the legend fill colour Changing the chart type</p>

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

				<p>Modifying charts using the layout tab</p> <p>Copying and moving charts within a worksheet</p> <p>Copying and moving charts between worksheets and workbooks</p>
8		2	Printing	<p>Printing:</p> <p>Worksheet setup(Worksheet margins, Worksheet Orientation, Worksheet page size , Header And Footers)</p>
9		2	Preparing to Print A Worksheet	<p>Preparing to Print A Worksheet:</p> <p>Visually check your calculations,</p> <p>Displaying gridlines when printing,</p> <p>Printing titles on every page when printing</p> <p>printing the excel row and column headings</p> <p>Spell checking</p> <p>Previewing a worksheet</p> <p>Comparing workbooks side by side</p> <p>Zooming the view</p> <p>printing options</p>
10		2	Opening and Viewing Presentations	<p>Opening and Viewing:</p> <p>First Steps With Presentations</p> <p>Creating a Presentation (Manipulating Slides, Themes: Text editing and formatting)</p>
11		2	Tables	<p>Tables:</p> <p>Table selection techniques</p> <p>Creating a table</p> <p>Apply style to a table</p> <p>Apply border to cells</p> <p>Inserting , Deleting & Modifying rows or columns</p>
12		2	Illustrations	<p>Formatting Shapes:</p> <p>(Grouping and ungrouping objects, Rotating or flipping an illustration)</p> <p>Formation charts :</p> <p>(Changing the chart type, Adding data table to chart)</p>

				Organization charts: (what is an organize chart, creating an organize chart, Adding a manager whiten an organization chart)
13		2	Organization Charts Moving, Copying and Deleting Slides	Organization Charts: What is an organization Chart? Creating an organization chart Adding label to items within organization chart Adding a co-Worker to an organization chart Adding a manager within an organization chart Changing the hierarchical structure of an organization chart Moving, Copying and Deleting Slides: Moving slides within a presentation or between presentations Copying slides between presentations
14		2	Slide Masters	Slide Masters: What is slide master Inserting a picture (clip art) into a master slide Inserting an image (form a file) into a master slide Creating a footer Automatic slide numbering
15		2	Slide Shows & Printing And Proofing	Slide Shows: Running a slide show Slide show transition effects Slide Show animation effects Printing And Proofing: Spell-checking Selecting your output format Printing a presentation
16		2	Customizing & Compatibility Issues	Customizing & Compatibility Issues: Modifying power point options Compatibility issues when saving a presentation

				Other file types you can use for saving a presentation Saving a presentation as a template
--	--	--	--	-----------------------------------------------------------------------------------------------

Reference:-

1-www.ecdl.org

2-http://www.ecdl.org/index.jsp

3http://www.ecdl.org/programmes/index.jsp?p=2927&n=2941#sthash.vVAKY0tN.dpuf4

http://www.ecdl.org/programmes/index.jsp?p=2928&n=2942#sthash.ZWvGphxk.dpuf.

Physiology

Goals:-The aims of the subject is understanding the cell structure, organelles, cell permeability, and cell membrane transport , Explain the Nerve cell definition, structure of Cell, function of nerve cell, ,Define the Blood, Explain the blood components (Plasma and Blood Cells) and perform tests such as WBC and RBC count .

Course description:

The course introduces students to the functions of the human body in order to provide them with a better understanding of physiology for integration into theoretical and clinical anesthesia practice.

Leaning Objectives

At the end of the session, students will be able to Explain:-

- Define what immunity is.
- Types of immunity (Innate and Acquired Immunity).
- What is vaccines and what do vaccines in the body in term of immunization.
- Physiological function of respiratory, respiratory, gastrointestinal, CVS, reproductive and urinary system.

Teaching learning strategies:

- Lecture
- Class and small group discussion

- Audio-visual aids
- Role play
- Self-directed study

Evaluation:

- - Written final examination 60%
- - Skills lab examination 20%
- - Mid -term: (Attendance, discipline, class activity and Preparation - including answering oral questions, quiz, etc. 20%)

Source needed:

- Equipped Physiology Lab: microscope, bain-marie water boiler, hemoglobin meters, micro centrifuge, shakers, ECG recording device, centrifuge, etc.
- Practical physiology handbook (prepared by related department)
- Computer, video projector, whiteboard and whiteboard

Physiology				
Discipline		Anesthesia		
Department		Physiology		
Title		Physiology1		
Pre-requisites		Biology& Anatomy		
Code		AT212		
Class		1		
Semester		Fall		
Credit 3		Theory	2	
		Practical	1	
Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1	2	1	Cell Physiology and Nerve Cell	Introduction to cell physiology Nerve cell physiology Function , Synapses, mechanisms of conduction

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

2	2	1	Muscle Physiology	Muscle physiology function and mechanisms of contraction Types of contraction
3	2	1	Blood Physiology	RBC, Structure and function, Hb, WBC, Structure and function
4	2	1	Blood Physiology	Innate Immunity and acquired immunity Structure, types and function of Antibodies, types of T-Cells
5	2	1	Blood Physiology	Hemostasis and blood types
6	2	1	Gastrointestinal Physiology	Introduction to GI physiology, Mechanisms of GI tract movements and reflexes GI secretions, Hormones and regulations
7	2	1	Gastrointestinal Physiology Respiratory System	Digestion and Absorption Introduction to RS, Mechanisms of Respiration, Inspiration and Expiration
8	2	1	Respiratory System	Types of Respiration and gases exchange Regulation of Respiration
9	2	1	Endocrine Physiology	Introduction of endocrine system Pituitary hormones and its functions in the body
10	2	1	Endocrine Physiology	Thyroid hormones, Adrenal cortex, Pancreas and Para thyroid hormones Gonadotropins, secretions and functions
11	2	1	Reproductive Physiology	Female reproductive physiology, Menstruation Pregnancy, Parturition and lactation

12	2	1	Reproductive Physiology	Male reproductive system, spermatogenesis Fertilization and gestation Male sex hormone (Testosterone) Male sexual act
13	2	1	Urinary System Physiology	Introduction to Urinary System, Filtration Reabsorption of water and materials in tubules
14	2	1	Cardio Vascular System	Introduction to CVS, Cardiac Cycle, Action Potential, Automatism
15	2	1	Cardio Vascular System Central Nervous System	Blood Circulation Major and Minor Blood Pressure, Pulse, Capillary Circulation
16	2	1	Central Nervous System and Special Senses	Introduction to CNS physiology, Sensory and Motor Functions Autonomic Nervous system (Sympathetic and Para sympathetic) Special Senses Vision Hearing Taste and Smell

Text Books:-

1-GUYTON AND HALL Textbook of Medical Physiology, Twelfth Edition, 2011.

Bacteriology

Goals:-The aims of this subject is understanding the fundamental of all microorganisms and their side effects and damages to the human life cycle.

Course description:

This course covers principle of bacteriology and the impact these organisms have on men and the environments, Topics include the various groups of microorganisms, their structure, physiology, genetics, microbial pathogenicity, infection diseases, immunology and selected practical applications.

Learning Objectives

After completion of this course students will be able to:

- Describe morphology and physiology of microorganisms, infections and immunity .
- Identify different kinds of microorganisms, isolation and culture of microorganisms.

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self-directed study

Evaluation:

- - Written final examination 60%
- - Skills lab examination 20%
- - Mid -term: (Attendance, discipline, class activity and Preparation - including answering oral questions, quiz, etc. 20%

Source needed:

- Computer, video projector, whiteboard and marker.
- Equipped educational bacterial lab.
- Bacteriology handbook.

Bacteriology	
Discipline	Para clinic
Department	Microbiology

Title		Bacteriology		
Pre-requisites		None		
Code		AT213		
Class		1		
Semester		Fall		
Credit	2	Theory	1	
		Practice	1	
Weeks	Hour		Topics	Descriptions
	Theory	Practical		
1	1	1	Introduction to Microbiology	Microbial world, their importance in human life, biomass and its composition; beneficial and harmful microbes.
2	1	1	Different types of Micro-organisms	Cellular and non-cellular microorganisms; prions, viruses, viroids. Prokaryotes (bacteria and archaic).
3	1	1	Different types of micro-organisms	Protista; Protozoa, fungi, algae, slime molds
4	1	1	Bacteriology, Principal forms	Classification according to morphology; coccic, bacilli, spirally.
5	1	1	Bacterial Cell structure	Cytoplasmic structures; Nucleoid, ribosomes, vesicles, granules.
6	1	1	Bacterial Cell structure	Cell envelop; gram positive and gram negative cell envelops and their differences.
7	1	1	Bacterial Cell structure	Flagella, pili, Glycocalyx.
8	1	1	Endospore and Classification	Spore and its importance in bacterial sustainability;

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

				spore forming bacteria, sporulation.
9	1	1	Physiology; biochemical composition of bacterial cell	How a bacteria lives? Water and solid components of bacterial cell.
10	1	1	Transportation Mechanisms and classification according to nutrition	Free, facilitated and active transport; autotrophs and heterotrophs.
11	1	1	Oxygen, pH and temperature requirements	Classification of bacteria according to O ₂ consumption; role of temperature and pH on bacterial growth.
12	1	1	Energy production	Photosynthesis and chemosynthesis; respiration and fermentation.
13	1	1	Growth and reproduction	Generation time and its importance in predication of clinical course of an infection; Growth curve
14	1	1	Growth requirements, Enzymes	Organic and inorganic compounds needed for bacterial growth; role of enzymes in bacterial metabolism
15	1	1	Normal microbial flora	Normal flora of the body and their importance; types of normal flora
16	1	1	Normal microbial flora	Flora containing/free systems.

Text Books:-

1. Medical microbiology, 25th edition: Jawetz, Melnick & Adelberg's

2. Microbiology, 2nd Edition (Lippincott's Illustrated Reviews): Richard A. Harvy, Pamela C. Champ, Bruce D. Fisher
3. Clinical microbiology made ridiculously simple, 3rd edition: Mark Gladwin, M.D; Bill Tattler, M.D.
4. Practical handbook of Microbiology, 2nd edition: Edited by Emanuel Goldman and Lorrence H. Green.

Biophysics

Goals:-The aims of this course develop basic understanding of biophysics concepts .learn the effect of stability and static forces applied in different states of the body and calculation of forces using lever rules.

Course description

This course will introduce physic and biology students to biological physics. Current topics format will give the course...

Learning Objectives

The students should be able to:-

- Know the way of the generated electrical current
- Mechanical energy and its use,
- Biophysics of heat and light, biological effect of UV and X-ray.

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self-directed study

Evaluation:

- - Written final examination 60%
- - Skills lab examination 20%
- - Mid -term: (Attendance, discipline, class activity and Preparation - including answering oral questions, quiz, etc. 20%

Source needed:

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

- Computer, video projector, whiteboard and marker.
- Equipped educational physic lab.
- Biophysics handbook.

Biophysics				
Discipline		Basic Sciences		
Department		Medical Physics Department		
Title		Biophysics		
Pre-requisites		None		
Code		AT214		
Class		1		
Semester		Fall		
Credit 2		Theory		1
		Practical		1
Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1	1	1	Energy used of in Medicine	Electrical Energy , Atomic Electron Orbit or Axis , Specification of Atom , (Atomic Number)(Atomic Mass) ,Theory of BohrFirst Axiom /Bohr Second Axiom.Solved Problems / Exercises
2	1	1	Way of the generated Electrical Current	Way of the generate Electrical Current/Electrical Current Effects , Electrical Current Effects in conductors , Temperament Effects of Electrical Current , Chemical Effects of Electrical Current , Instances or Cases of Electrodes in Medicine (Ionospheres) , Magnetic Effects of Electrical Current /Solved Problems / Exercises
3	1	1	Capacitorused of in Medicine	Capacitorused of in Medicine , Galvanic current , Galvanic Therapy , Electric Shock, Intensity current of Shock Period of Passing Electric current in Electric Shock ,Type of Electric current inElectric

				Shock, Course of Electric current in Electric Shock, The Cause of Death or to die in Electric Shock /Solved Problems / Exercises
4	1	1	Mechanical Energy and Used in Medical	Mechanical Energy and Used in Medicine /Biomechanics, Elevators or Fames , First Type , Second Type, third Type, The overall balance of the body , Body's center of gravity ,A: Static, B: moving /Solved Problems / Exercises
5	1	1	Biophysical of sound and mechanical hearing	Biophysical of sound and mechanical hearing ,A: Intensity of sound, B: Height of sound , C: resonance of sound, Hearing mechanisms , Physical diagnosis of hearing Defects Audiometer :Rain experience , Ultrasonic waves /Physical and chemical properties of Ultrasound, Production through ultrasonic waves, A: piezoelectric properties, B: Three Layers quartz, Ultrasound machines and how to use it, Biological effects of ultrasonic waves, Solved Problems / Exercises
6	1	1	Medical use of ultrasonic waves	Medical use of ultrasonic waves A: In the case of tissue repair such as ,B: as a soothing , C: in degenerative diseases ,D: The beat is eaten ,E: In a type of phenomena ,F: In the zone diseases, 14: Diagnostic Ultrasound, Precautions in the use of ultrasonic waves .Solved Problems / Exercises
7	1	1	Biophysics of heat and light energy and its	Biophysics of heat and light energy and its, 1: the exchange of thermal energy in the body, 2: a feeling of heat and cold, 3: Thermal Protection, 4: Profile of thermal water and the results of its biophysical, A: Specific heat of water, B: Heat of vaporization of water, C: specific weight of water and their changes with temperature ,Solved Problems / Exercises

Text Books:-

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

8	1	1	Biological effects of ultraviolet (UV)	Biological effects of ultraviolet (UV) , Natural sources of ultraviolet , Artificial sources of ultraviolet , Biological Effects of Ultraviolet , Airtime or skin redness , Darkening of the skin ,The use of ultraviolet to treatment , Sources of infrared Radiation , Medical use of Infrared Radiation ,Beam of Laser , Types of lasers, A:Lser-solid, B: gas laser, C: Semiconductor laser, The Medical use of lasers ,Solved Problems / Ex..
9	1	1	X-Ray and its application in Medicine	X-Ray And its Application in Medicine,The nature of X-Ray, X-Ray generating devices, X-Ray properties, Ionization properties, Fluorescence properties of X-Ray, Chemical properties of X-Ray, The Qualities of X-Ray Emission in the Physical, Environment, The Secondary Radiation, X-Ray Absorption-Ray Measurements X-Ray Measurements Based on Ionization , Solved Problems / Exercises
10	1	1	The X-Ray Dose unit	The X-Ray Dose unit, Absorption Dose, Unit of Absorbed Dose , Construction of Dosimeter , Ionization Room, Measuring Devices, Physical Principles of X-Ray diagnosis, X-Ray Power Absorbed , X-Ray Absorption Coefficient , Radiology Picture of the Formation Mechanism , Radiology Devices, The Requirements for Obtaining Radiographic Image , The Secondary Radiation of Effect on the film, Lucalisator, Potter Bucky Networks Solved Problems / Exercises
11	1	1	Nuclear energy and bio-physical effect	Nuclear Energy and Bio-physical Effect , Introduction of Nuclear Power, The Nucleus of Atom and its Conditions, level of Energy And Unstable Nuclei, Potential Wall, Correlation

				Energy or Atomic Absorption, Isotope, Isobar, Isotones, Isomer, Solved Problems / Exercises
12	1	1	Radius of Radioactive Materials	Radius of Radioactive Materials/Natural Radioactive Materials, α -Ray , β - Ray, γ - Ray, Radioactivity Principle,Changes and Exchanges of Radioactive, Change with the Issuance of a Particle (α), Change with the Issuance of a Particle (β), Change with the Issuance of a Particle (γ), Changes or Half-Life Period of Radioactive, Radio Isotopes, Way of Produce Radioactive Isotopes, Charged Particles help of with to Production of Radioisotopes,Use of Photons Energy, Nuclear Reactions with Neutrons, Solved Problems / Exercises
13	1	1	Nuclear Reactor	Nuclear Reactor /Produced Radioisotopes from division products, Detected and Measurement of Radioactivity,Detected and Measurement of Radioactive Materials,The Phenomenon Ionization, Fluorescence Phenomena, The Chemical Properties of Radiation, Other Properties of Radiation, The Use of Radioisotopes in Medical and Biological Research, Labeled Molecules, Solved Problems / Exercises
14	1	1	Radio Biology	Radiology types of tissue and cell that get exposed to Radiation,amount of Radiation, Lesions caused by Ionizing Radiation,Radius Effects of Biological Mechanisms,Properties of Radiation Treatment, X-Rays and radio Active, Radioactive Material, Radioactive Isotopes, Internal Usage, External Usage,Radio Therapy, Physical Principles of Radiotherapy, Surface of Body Radiotherapy, Deep body

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

				Radiotherapy,Changed Radiotherapy, protection in risks of Radius, Solved Problems / Exercises
15	1	1	Maximum Permissible Level of Exposure	Maximum Permissible Level of Exposure /Radiology and Radiotherapy protection examination and use of protective equipment: Ray examinations of patients in Radiotherapy protection: Protection of employees in radiology examinations Radiation Protection in Radiotherapy ,Solved Problems / Exercises
16	1	1	Ways Radiation Protection, Radioactive Materials	Ways Radiation Protection, Radioactive Materials , Protection of the α -ray Protection of the β -ray Protection of the γ -ray, Standardization and control of Radiation Protection, The maximum dose Occupational,Classify People in terms of the Maximum Radiation, Control, Personal Protection and sites,Film Dosimeter, Thermophotonisation, Solved Problems / Exercises

- 1- Allen H Crammer book.
- 2- DrMohammad Bahar book.

Anatomy

Goals:-The broad goals of teaching of graduate students in anatomy are to providing comprehensive knowledge of the gross structure of human body to provide basis for the clinical correlation of organs or structures involved and anatomical for the disease presentations.

Course description:

The course introduces students to the structures and functions of the human body in order to provide them with a better understanding of anatomy and for integration into theoretical and clinical anesthesia practice.

Learning Objectives

At the end of this course students will be able to:-

- Osteology: structure, composition and function of the skeleton and movement.
- Muscular system: skeletal muscles and their function.
- Anatomy of the respiratory organs, larynx, trachea, bronchus and lungs.
- Basic anatomy of the heart, major blood vessels, heart chambers.

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self-directed study

Evaluation:

- - Written final examination 60%
- - Skills lab examination 20%
- - Mid -term: (Attendance, discipline, class activity and Preparation - including answering oral questions, quiz, etc. 20%)

Source needed:

- Computer, video projector, whiteboard and marker.
- Equipped educational anatomy lab.
- Anatomy handbook.

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

Anatomy		
Discipline	Anesthesia	
Department	Anatomy	
Title	Anatomy2	
Pre-requisites	None	
Code	AT215	
Class	1	
Semester	Fall	
Credit	4	Theory 2
		Practical 2

Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1	2	2	Basic Anatomy Basic structures	Definition, descriptive anatomical terms, skin, fascia, muscles, joints, ligaments, blood vessels, bones, cartilages
2	2	2	Human osteology	Bones of the upper limb Bones of the lower limb Vertebral column
3	2	2	The skull	Bones, cranial fossa, foramina, cranial cavity, orbit, nasal cavity, para nasal sinuses, oral cavity

4	2	2	The back and upper extremity	Musculature, joints, vessels and nerves
5	2	2	The lower extremity	Musculature, joints, vessels and nerve
6	2	2	The Thorax	Lungs and pleura, mediastinum, heart and pericardium,
7	2	2	The Abdomen	Abdominal wall, regions, GI tract, liver, spleen, pancreas
8	2	2	The Abdomen	kidneys, ureter and adrenal glands, nerves and blood vessels
9	2	2	The Pelvis	Reproductive organs, urinary bladder, urethra, rectum, anal canal, perineum, blood vessels and nerves
10	2	2	The Head and Neck	General description, cranial cavity, meninges, brain and its blood supply
11	2	2	Cranial Nerves and the face	All 12 cranial nerves, facial expression muscles, and the scalp
12	2	2	The Orbits	Eyelids, lacrimal apparatus, muscles and nerves of the orbit, the eye ball,
13	2	2	The Ear and infra temporal fossa	Temporomandibular joint, temporal fossa, infra temporal fossa and pterygopalatine fossa.
14	2	2	The Neck	Triangles of the neck, thyroid and parathyroid glands, pharynx and larynx, nasal cavity and oral cavity, teeth and gingiva
15	2	2	Central Nervous System	Introduction to CNS, spinal cord, the brainstem

16	2	2	Central Nervous System	Cerebellum, cerebrum, ventricles of the brain, cerebrospinal fluid
----	---	---	------------------------	--------------------------------------------------------------------

Text Books:-

- 1-Gray's anatomy of medical students.
- 2-Clinical anatomy by Richard Snell.

Immunology

Goals:-The aims of fundamental immunology course introduce the components of the immune system, their locations in the human body, and their interactions in different clinical contexts, students will learn how the immune system senses and attempts to eliminate pathogens, and how selected pathogeneses evade it to cause diseases.

Course description:

Introduce the principle of immunology including, development of immunsystem, innateimmunity.immunogloboline structure and genetic, antigen-antibody reactions, the major histocompatibility complex reactions and antigen presentation cell receptors (genetics, structure, selection)T cell activation..

Learning Objectives

After completion of this course students will be able to:

- Describe primary knowledge of immunology.
- Perform serologic tests.
- Understand the genes and molecules that play key roles in the immune system including antigens, antigen receptors, antibody, complement, major histocompatibility complex...

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self-directed study

Evaluation:

- - Written final examination 60%
- - Skills lab examination 20%
- - Mid -term: (Attendance, discipline, class activity and Preparation - including answering oral questions, quiz, etc. 20%)

Source needed:

- Computer, video projector, whiteboard and marker.
- Equipped educational immunology lab.
- Immunology handbook.

Immunology				
Discipline		Anesthesia		
Department		Microbiology		
Title		Immunology		
Pre-requisites		Biology		
Code		AT216		
Class		2		
Semester		Spring		
Credit 2		Theory	1	
		Practical	1	
Weeks	Hour		Topics	Descriptions
	Theor	practic al		
1	1	1	Introduction of Immunology	Definition, scope of study, reference, useful tips

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

2	1	1	History and impact of immunology on human life	History of infectious diseases and their impact on human life, Role of Variegation in the prevention of small pox...
3	1	1	Classification of immunity and immune cells	What is immunity? Phagocytic and lymphoid cells and their types.
4	1	1	Natural immunity	Special, Racial and individual immunity; mechanical barriers to infections; Biological and Humoral factors
5	1	1	Natural immunity	Complement system and it's activation pathways; Cellular components and inflammation
6	1	1	Specific immunity	Review of lymphoid cells, their development and types; types of specific reactions; Cellular and humoral components and their activation pathway
7	1	1	Passive immunity and vaccination	Immunoglobulin therapy; General properties of vaccines; vaccine types
8	1	1	Antigen	Definition, active sites, structure, classification according to structure; Bacterial cell antigens; Fate of antigens
9	1	1	Antibody	Definition, structure, Active sites; Immunoglobulins, antibody synthesis theories
10	1	1	Immunologic reactions	Definition, importance, Neutralization test; Agglutination test (Direct and indirect), types
11	1	1	Immunologic reactions	Opsonization and opponents; Precipitation; Immunoelectrophoresis
12	1	1	Immunologic reactions	Lysis; complement fixation; Comb's test; Eliza; PCR
13	1	1	Allergy and Hypersensitivity	Introduction, types of reactions; Hypersensitivity type I and II
14	1	1	Allergy and Hypersensitivity	Hypersensitivity type III and IV
15	1	1	Histocompatibility, Autoimmunity	
16	1	1	Autoimmunity, Tumour immunity	

Text Books:-

1. Medical immunology, Tristram G, Par slaw.
2. Immunology for medical students Roderick Nerin.
3. Basic immunology, Abul K Abbas,

**Second Year
First Semester
Islamic Studies**

Goals: -The Islamic studies provides a basic and advanced information about Islam and his relationship with medicine in individual fields.

Learning objectives:

At the end of course the students well be able to:

- Explain basic information about Islamic studies
- To understand of the students regarding Islamic civilization
- To to perform prayers and other worships

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self-study

Evaluation:

- - Written final examination 80%
- - Mid -term: (Attendance, discipline, class activity and Preparation – including answering oral questions, quiz, etc. 20%

Source needed:

- Computer, video projector, whiteboard and whiteboard.
- Islamic handbook.

Discipline		Anesthesia	
Department		Islamic Studies	
Title		Worships	
Pre-requisites		None	
Code		AT317	
Class		2	
Semester		Spring	
Credit	1	Theory	1
		Practical	
Weeks	Theory	Practical	Topics And Descriptions
1	1		Worships: General Information regarding worships (Ebadat)
2	1		Worships: types of worships (Ebadat)
3	1		Worships: Pillars of worships (Ebadat).
4	1		Worships : conditions of worships (Ebadat)
5	1		Worships: difference between obedience & worship
6	1		Worships: Target of worship.
7	1		Worships: Worthy of Worship
8	1		Worships: Outcome of Worship
9	1		Worships: The Factors and Lethargy of Worship
10	1		Worships: Bedsat (Innovation) in worships.
11	1		Worships: General Information about Philosophy of Worships and Philosophy of Salah
12	1		Worships: The prayer in summation (Jamat), Aid and Jenaza prayer
13	1		Memorization and translation of: Surah 78 – 84
14	1		Memorization and translation of: Surah 78 – 84
15	1		Special Duaa (prayers): according to Hadith and Sunna
16	1		Special Duaa (prayers): according to Hadith and Sunna

English

Goals:-The aims of this course isto enhance their language skills of speaking, reading, listening and writings and also they will be able to use Medical dictionaries such as Dorland, Oxford etc. In this stage we persuade our students to talk and to write about their jobs and their responsibilities in the community.

Course description:

This course is designed to enhance the oral communication skills of the students through discussion, and further improve their writing skills using a variety of nursing and non-nursing texts and appropriate of grammar and evaluate the student’s development their listening, speaking, reading and writing skills relate to the nursing context. The focus is contextual grammar, summarization and presentation skills.

Learning Objectives:

By the end of this course the students should be able to:-

- They will be able to give presentations on different kinds of topics in English.
- study English medical books and journals.
- write medical articles.

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self-study

Evaluation:

- | | |
|-----------------------------------------------------------------------------------------------|-----|
| • Written final examination | 60% |
| • Assignments, seminar, project or practical exercises
(With practical assessment methods) | 20% |
| • Class activity, tests during the semester attitude in contributing
To group work | 20% |

Source needed:

- Computer, video projector, whiteboard and marker.

- Equipped educational English department.
- English handbook.

English				
Discipline		English language		
Department		English department		
Title		ESP/Professional English		
Pre-requisites		None		
Code		AT318		
Class		2		
Semester		Spring		
Credit 1		Theory		0
		Practical		1
Weeks	Hours		Topics and Descriptions	
	Theory	Practica		
1		1	The skin 1	<p>Speaking :Talk about some types of skin lesions</p> <p>Reading : Read the passage on page 70</p> <p>Listening : listen to the pronunciations of the new words in the cassette</p> <p>Writing : Write about the skin injuries of someone who has involved in a fight in a restaurant</p>
2		1	The skin 2	<p>Talking about types of injuries to the skin</p> <p>Read a case report that consist of injury types</p> <p>Talk about different kinds of sores and the similar words used for</p>
3		1	The urinary system	<p>Speaking :Talk about urinary system</p> <p>Reading :read the passages silently and then loudly by one of the students</p> <p>Listening :listen to the pronunciation of the new words</p> <p>Writing: Write a number doctor's questions about urinary symptoms of a patient.</p>

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

4	1	Endoscopy	Speaking: Talk through the process of endoscopy with a patient and also about use of Reading: Read the relevant passages on p.80 Listening: listen to a doctor talking through endoscopy of a patient
5	1	X-ray / CT	Speaking :Talk about the use of CT and x-ray Reading : Read the passages Listening ;listen to the pronunciation of the new words Writing : Write about the benefits of using ultrasound in in diagnosis of disease in your country
6	1	MRI	Speaking: Describe an MRI and ultrasound Reading :Read these passages Listening :listen to the pronunciation of the new words Writing :Write a prescription for a patient of yours
7	1	Ultrasound	Speaking: Talk about the use of ultrasound Reading : Read the passages on p.90 Listening :listen to someone who is talking about the importance of ultrasound examination Writing: write a short article about a the different kinds of therapies
8	1	ECG	Speaking talk about the method of using ECG Reading :Read the passages on p.94 Listening :listen to the pronunciation of the new words Writing: write an advice for a countryman taking some vaccine to prevent measles
9	1	Immunization	Speaking :Talk about false positive and false negative r Reading :read the passages p.98 Listen: listen to the words pronunciation. Writing :write about your views about immunization in your country
10	1	Epidemiology	Speaking :talk about the rates of mortality and birth Reading :read the these passages .on p.96 Listening :listen to pronunciation of the new words in the cassette Writing :write a passage about how to manage a research in a hospital

11		1	Medical ethics	Speaking :talk about the bioethical issues and assisted dying : read these passages on p 98 Listening: listen for a medical conversation Writing :write about guide line in Afghan of public health
12		1	Research	Speaking : talk about case control and cohort studies Reading :read the passages on p.100 Listening :listen to the new words Writing :Write about a trial
13		1	Taking history	Speaking :talk about full case history Read these passages on p. 102 Listening :listen the correct pronunciation of some of psychiatric problems Writing :Write a case history of a patient
14		1	Taking history part 2	Speaking ;talk about drug history reading : read the passages silently on p.104 Listening :listen to medical conversation Writing :Write about a patient who has a tumor, and how to give him the bad news
15 16		1	Taking history part 3	Speaking :Talking about patient's ideas , concerns and expectation Reading :read these passages on p 106 Listening :listen to the new words pronunciation Writing: write a short article about taking history of diabetic patient.

Text Books:-

1. Glendenning .H.E. & Howard .R, (2007), Professional English in use. Cambridge: Cambridge university press.
2. English grammar by Betty Scamper, 3rd edition.
3. Essential grammar in use by Roy moundMurphy, 3rdedition, 2007.

General Biochemistry

Goals:-The medical biochemistry course introduces the fundamental of biochemistry as applied to medicine. We explore the basic amino acid building blocks and how differences in structures are manifested into a variety of functional states, explores nucleic acids, macromolecular machines and their regulations on molecular level, intrinsic nature of metabolism, fundamental of carbohydrate and amino acids metabolism...

Course description:

During this course, the structures and functions of biological molecules of body, biochemical reactions and regulation mechanisms of a sound body, will be presented. Moreover, the students will learn how to perform biochemical tests applicable to nursing. This course, along with other basic biological sciences, provides a better understanding of function and structures of the human body for integration into theoretical and clinical nursing. This course is comprised of theoretical and practical lessons.

Learning Objectives:

At the end of this course student will be able to:-

- Describe basic biochemical knowledge
- Identify biochemical relevant reactions.
- Describe vitamin and enzymes.
- Metabolism of water and non-organic substances.
- Laboratory works in relevant issues.

Teaching learning strategies:

- Lecture
- Discussion
- Small group projects
- Presentation
- Self-study
- Laboratory work and demonstration

Evaluation:

- | | |
|----------------------------------------------------------|-----|
| • Written final examination | 60% |
| • Skills lab examination | 20% |
| • Mid -term: (Attendance, discipline, class activity and | 20% |

Preparation – including answering oral questions, quiz, etc.

Source needed:

- Computer, video projector, whiteboard and marker.
- Equipped educational biochemistry lab.
- Practical Biochemistry handbook (prepared by related department).

General Biochemistry				
Discipline		Anesthesia		
Department		Medical Technology		
Title		Biochemistry		
Pre-requisites		None		
Code		AT319		
Class		2		
Semester		Spring		
Credit 2		Theory		1
		Practical		1
Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1	1	1	Biochemistry & Carbohydrates Monosaccharide's	Introduction, Definition of Biochemistry, Relationship Between Biochemistry and Medicine & Introduction, Definition, Classification, Introduction of the most important monosaccharide's

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

2	1	1	Disaccharides Poly saccharides	Introduction of Disaccharides, Maltose, Lactose, Sucrose. Introduction, Homo Poly saccharides (Starch, Glycogen ,Insulin , Cellulose , Dextrin) Hetero Poly saccharides(Hyaluronic acid , Chondroitin sulfate, Heparin)and (Glycoproteins
3	1	1	Digestion and Absorption of Carbohydrates Lipids	Digestion and Absorption of Carbohydrates Introduction, Classification , Derived Lipids : Fatty acid (Definition, Types , Essential fatty acid , Melting point , Eicosanoids) Glycerol.
4	1	1	Steroids and Sterols & Simple Lipids Compound lipids	Introduction, Cholesterol, Other Sterols: 7-dehydrocholesterol & Introduction , Neutral fats or Triglycerides Waxes Introduction 1- Phospholipids Di phosphatidylglycerol , lecithin's , cephalous , phosphotidyl serine , phosphotidyl Inositol , Lysol phosphatides , plasminogen's , sphingomyeline) 2- Glycolipids (cerebrosides , Gangliosides)
5	1	1	Digestion and Absorption of lipids Digestion and Absorption of lipids	Bile and role of it in Digestion Digestion of lipids and absorption of lipids

6	1	1	Amino Acid and Proteins: Properties of Amino acids	Introduction Classification and structure of Amino acids, Essential Amino acids, Physicochemical Properties Chemical Properties: Due to Carboxylic Group (Formation of Ester, Formation of Amide, Formation of Amine by Decarboxylation). Due to Amine Group (Salt formation with acids, Acylation, Methylation, Reaction with HNO ₂ , Reaction with CO ₂ , Oxidative Deamination).
7	1	1	Peptide Bond Proteins	[Classification, Structure, Reactions of Proteins (Reaction with water, Denaturation, Reaction with Ions]. Nucleoprotein Base purine , pyrimidine , sugar , Nucleotide ,Nucleosides
8	1	1	Nucleoprotein Nucleic acid (DNA, RNA)	
			Digestion and Absorption of Proteins	Digestion of Proteins and absorption of Proteins
9	1	1	Vitamins: Vitamin A	(Introduction, Classification), Water.... Soluble Vitamin Fat Soluble Vitamin (Structure, Forms, Dietary Sources, Daily Requirement, Absorption, Storage and Transport, Functions ofvit.A).

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

10	1	1	VitD and vitE Vit.K,	(Structure, Forms, Dietary Sources, Daily Requirement, Absorption, Storage and Transport, Functions of Vit.D and vit.E. Structure, Forms, Dietary Sources, Daily Requirement, Absorption, Storage and Transport, Functions of Vit.K.
11	1	1	Water Soluble Vitamins: Vit. B1, Vit. B2 Vit. B5, Vit. B6,	Structure, Metabolism, Sources, Metabolic Role, Deficiency of some vitamins, Daily requirement). Structure, Metabolism, Sources, Metabolic Role, Deficiency of some vitamins, Daily requirement).
12	1	1	Vit.PP, Vit. H Vit. B12, Vit. Bc ,Vit.C	Structure, Metabolism, Sources, Metabolic Role, Deficiency of some vitamins, Daily requirement). Structure, Metabolism, Sources, MetabolicRole,Deficiency of some vitamins, Daily requirement)
13	1	1	Enzymes Enzymes	Introduction, properties, factors affecting Enzymes activity .Mechanism of Enzyme action Enzymes Inhibition , Regulation of Enzymes activity
14	2	2	Enzymes Enzymes	Classification , Role of metals in Enzymes activity ,Co Enzymes Diagnostic value of Enzyme levels.

15	1	1	Metabolism of Water and Non Organic Substances Metabolism of Water and Non Organic Substances	Introduction Fluid Compartments of the Body, Determination of Body Fluid Compartments , Gain and Loss of Body Water, Regulation of Water Balance, Effects of a Pure Water Deprivation, Water Excess or Water Intoxication. Metabolism of Non Organic Substances: Introduction, The electrolytes of Body Fluids, Sodium, Potassium, Magnesium, Chloride.
16	1	1	Metabolism of Water and Non Organic Substances Metabolism of Water and Non Organic Substances	Metabolism of Minerals and Trace Elements: Introduction, Iron, Manganese , Calcium, Phosphorus , Zinc, Molybdenum, Chromium, Selenium, Iodine, Sulfur, Fluorine, Nickel, Copper, Cobalt. Aluminum (Aluminum) and Silicone.

Text Books:-

- 1-Harper's biochemistry, 29th edition, 2012Subsidiary References
- 1- Medial biochemistry, second edition, 2006
- 2- Lehninger A.L. biochemistry, the molecular basis of cell structure and function, fifth edition, 2008
- 3-Lubert Stryer B.

First AID

Goals:-The surgical clerkship is designed to introduce students to the theoretical and skills aspects of surgical patient care. Emphasis is placed on the underlying pathophysiology rather than technical aspects. Students are fully involved in the daily care of surgical patients and participant in diagnostic and therapeutic decision making.

Course description:

The purpose of this course is to help participants identify and eliminate potentially hazardous conditions in their environment, recognize emergencies and make appropriate decisions for first aid care.

Learning Objectives

The students should be able to:-

- Know the basic clinical procedures and causal assessment.
- To apply the knowledge of stopping bleeding.

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self-study

Evaluation:

- - Written final examination 60%
- - Skills lab examination 20%
- - Mid -term: (Attendance, discipline, class activity and Preparation - including answering oral questions, quiz, etc. 20%

Source needed:

- Practical surgery handbook (prepared by related department)
- Computer, video projector, whiteboard and whiteboard

References:

1.

First AID				
Discipline		Anesthesia		
Department		Surgery		
Title		First aid		
Code		AT320		
Pre-requisites		Anatomy1		
Class		2		
Semester		Spring		
Credit		4		
		Theory		2
		Practical		2
Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1	2	2	First aid	Introduction Definition of first aid Responsibilities of first aid Philosophy of first aid Health and safety....
2	2	1	Fundamental criteria for first aid	Understanding vital body functions for first aid Adverse conditions Basics of first aid Evaluating a casualty
3&4	4	2	Basic Clinical Procedures	

General pathology

5&6	4	2	Casualty assessment	<p>The primary survey DRS ABCD {Danger: (Moving a casualty.) Response:(overview, causes of unconsciousness, How to check for responsiveness, four level of responsiveness) Send for help: (Activating the Emergency Medical services) Airway:(overview, airway obstruction, suffocation, strangulation, choking, how to check an airway) Breathing :(causes of absent or ineffective breathing, Signs of ineffective breathing...</p>
7&8	4	2	Stop the Bleeding	<p>. General Clothing methods of temporary, homeostasis, elevation, bandage application, direct pressure, bent the joint Tourniquet application, methods, indications, inconvenient, mistake ,application, clamping the bleeding vessels, Special types of external bleeding <ul style="list-style-type: none"> - From an open fracture - From a tooth socket - From the ear passage - From the nose - From the lips, check and tongue Internal bleeding....</p>
9&10	3	2	Dressings, Bandages , Slings and Splint	<p>Standard dressing Bandage: Bandages; rules, fixing the end of bandage: type of bandage Tube gauze finger bandage, Triangular bandage, Broad and narrow fold bandage, Hand bandage,</p>

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

				Wrist and palm bandage, Elbow bandage.....
10&11	2	1	First aid for fractures	General Types of Fractures Signs and Symptoms of Fractures Management Principles of treatment Examination General treatment . Collarbone, Shoulder blade and shoulder upper arm, elbow.....
11	2		First aid in genitourinary system	Introduction Hematuria Acute swelling in scrotal content Testicular torsions Urinary system stones Trauma
12	2	1	FIRST AID FOR SPECIFIC INJURIES	General First Aid for Head, Neck, and Facial Injuries First Aid for Chest Wounds First Aid for Abdominal Wounds First aid for Burn Injuries Heat Injuries Cold Injuries Chemical burn Eye injury, loose foreign body Ear injuries ,foreign body Nose injury, foreign bodies Spinal injury
13	2	1	. FIRST AID FOR BITES AND STINGS	General Types of Snakes Snakebites Human or Animal Bites Insect Bites and Stings . First Aid for Bites and sting

14	2	1	Rescue and transportation procedures	General Principles of rescue operations Considerations Plan of action Proper Handling of casualties Positioning the casualty Medical evacuation and transportation of casualties Manual carries Improvised Litters
15	1	1	The Hand	Introduction Infection of the hand: felon, nail infection, tenosynovitis Gamekeeper's Thumbs Carpal tunnel syndrome Mallet finger Trigger finger
15&16	4	1	Fluid and electrolytes	Introduction Volume deficit(dehydration): causes, signs and symptoms, treatment, Volume excess: Isotonic ,hypotonic, hypertonic: causes, signs and symptoms, treatment, Ongoing fluid loss Assessing hydration status.....

Goals:-The broad goals of teaching graduates pathology are to impart the knowledge, skills and attitudes in the student to understand the etiopathology, morphology and pathological concepts related to various common disease.

Course description:

This is a laboratory-based course which provides students with the opportunities to build on the concepts and knowledge of altered physiological mechanisms and their impact on the functional status of the body. It also deals with the responses that participate in manifestation of disease. The usefulness of knowledge, skills and attitudes to the anesthesia in problem- solving in the hospital, school, community or home is the determining factor in

the selection and integration of the content.**Learning Objectives:**

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

The students should be able to:

- To know the principles of cell injury.
- Inflammation, immunodeficiency diseases.
- To know the general pathology of infectious disease.

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self- directed study

Evaluation:

- - Written final examination 60%
- - Skills lab examination 20%
- - Mid -term: (Attendance, discipline, class activity and Preparation – including answering oral questions, quiz, etc. 20%)

Source needed:

- Equipped Pathology Lab.
- Practical pathology handbook (prepared by related department)
- Computer, video projector, whiteboard and whiteboard

General Pathology	
Discipline	Anesthesia
Department	Pathology
Title	General Pathology
Pre-requisites	Biology,Anatomy,Physiology

Code			AT321	
Class			2	
Semester			Spring	
Credit 2			Theory	1
			Practical	1
Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1	1	1	Cell injury, cell death, and adaptation Overview of Cell Injury and Cell Death	Overview of Cellular Responses to Stress and Noxious Stimuli.-Cellular Adaptation to Stress: Hypertrophy, Hyperplasia, Atrophy, and Metaplasia Causes of Cell Injury and Morphology of Cell and Tissue injury
2	1	1	Autophagy and Intracellular Accumulation Inflammation and repair acute inflammation	Fatty change (Steatosis), Cholesterol, protein, Glycogen, Pigments
				-Overview of Inflammation and Tissue repair, -Stimuli for acute inflammation, -Recognition of microbes, necrotic cells and foreign substances, and-Vascular change

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

3	1	1	Acute Inflammation Morphologic Patterns of Acute Inflammation	-Cellular events: Leukocytes recruitment and Activation -Leukocyte-Induced tissue injury -Defect in leukocyte function
				-Serous inflammation. -Fibrous inflammation, -Superlative (purulent) inflammation and abscess formation, and -Ulcerative inflammation
4	1	1		-Serous inflammation. -Fibrous inflammation, -Superlative (purulent) inflammation and abscess formation, and -Ulcerative inflammation
				-Serous inflammation. Fibrous inflammation, -Superlative (purulent) inflammation and abscess formation, and Ulcerative inflammation
5	1	1	Chronic inflammation Systemic effects of inflammation	-Granulomatous inflammation Fever, Elevated of Plasma Level of Acute-Phase Proteins, Leukocytosis, Other manifestation of the acute phase response and sepsis
6	1	1		-Cell and tissue regeneration,-Scar formation -Factors that influence tissue repair

			Overview of tissue repair Selected clinical example of tissue repair and fibrosis	-Healing of skin wound,-Healing by first intention -Healing by second intention,-Wound strength
7	1	1	Hemodynamic disorders	-Hyperemia and Congestion,-Edema,-Hemorrhage
			Hemostasis and thrombosis	-Normal Hemostasis,-Thrombosis,-Disseminated Intravascular Coagulation (DIC)
8	1	1	Embolism and infarction Hypersensitivity reactions	Causes of hypersensitivity reactions Types of hypersensitivity reaction -Immediate (Type 1) hypersensitivity and Antibody mediated diseases (Type II hypersensitivity)
9	1	1	Systemic immune diseases and rejection of transplants	Systemic lupus erythematosus, Rheumatoid arthritis, Sjögren syndrome, Systemic sclerosis, and Inflammatory myopathies
			Immune deficiency diseases	Primary (Congenital) immune deficiencies
10	1	1	Immune deficiency diseases	Secondary (Acquired) immune deficiencies Acquired Immunodeficiency Syndrome (AIDS)
			Neoplasia	Nomenclature, Characteristics of benign and malignant neoplasms, Epidemiology

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

11	1	1	Clinical aspects of neoplasia	Effects of tumor on host, Grading and Staging of Cancer Laboratory diagnosis of cancer
			Molecular diagnosis of Mendelian and complex disorders	Molecular diagnosis of copy abnormalities Direct detection of DNA mutation by polymerase chain reaction (PCR) analysis, Linkage and genome-wide association studies, Indications for genetic-analysis
12	1	1	Environmental and nutritional diseases	Health effects of climate change, Toxicity of chemical and physical agents, Environmental Pollution
			Environmental and nutritional	Effects of tobacco, Effects of alcohol
13	1	1	Injury by therapeutic drugs and drugs of abuse	Injury by therapeutic drugs: Adverse drug reactions Injury by nontherapeutic toxic agents (Drug abuse)
			Injury by physical agents	Mechanical trauma, Thermal injury, Electrical injury Injury produced by ionizing radiation
14	1	1	Nutritional diseases	Malnutrition, Protein-Energy malnutrition
			Obesity Diet and systemic diseases, Diet and Cancer	Anorexia Nervosa and Bulimia
15	1	1	General pathology of	Leptin, Adipose tissue, Clinical consequences of Obesity

			infectious diseases General pathology of infectious Diseases	General principle of microbial pathogenesis Categories of infectious agents Special techniques for identifying infectious agents New and emerging infectious diseases, Agents of Bioterrorism
16	1	1	How microorganisms cause Disease Spectrum of inflammatory responses to infection	Mechanisms of viral injury, Mechanisms of bacterial injury, Immune evasion by microbes Superlative, Mononuclear/granulomatous, Cytopathic-cytoproliferative, Necrosis, and Chronic ,inflammation/scarring

Text Books

1. Robin and Cortran pathology basic of disease, LeonardS.Lilly MD.
2. NetterElastrated Human pathology, EdwardF.Golijan.
3. Rapid Review Pathology L.Buja MD.

Physiology

Goals:-The broad goal of the teaching of graduate students in physiology is providing comprehensive knowledge of the normal functions of the organ system of the body and their interaction to facilitate understanding of the physiological basis of health and changes in disease.

Course description:

The course introduces students to the functions of the human body in order to provide them with a better understanding of physiology for integration into theoretical and clinical anesthesia practice.

Learning Objectives:

At the end of the session, students will be able to:-

- Explain the cell structure, organelles, cell permeability, and cell membrane transport, explain the Nerve cell definition, structure of N.Cell, function of nerve cell, Define the Blood.
- Explain the blood components (Plasma and Blood Cells) and perform tests such as WBC and RBC count. Define what is immunity, types of immunity (Innate and Acquired Immunity) what is vaccines and what do vaccines in the body in term of immunization, physiological function of respiratory, respiratory, gastrointestinal, CVS, reproductive and urinary system.

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play

- Self- directed study

Evaluation:

- - Written final examination 60%
- - Skills lab examination 20%
- - Mid -term: (Attendance, discipline, class activity and Preparation - including answering oral questions, quiz, etc) 20%

Source needed:

- Equipped Physiology Lab: microscope, bain-marie water boiler, hemoglobin meters, micro centrifuge, shakers, ECG recording device, centrifuge, etc.
- Practical physiology handbook (prepared by related department)
- Computer, video projector, whiteboard and whiteboard

Physiology				
Discipline		Anesthesia		
Department		Physiology		
Title		Physiology2		
Pre- requisites		Biology& Anatomy		
Code		AT322		
Class		2		
Semester		Spring		
Credit 2		Theory	1	
		Practical	1	
Weeks	Hours		Topics	Descriptions
	Theory	Practical		

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

1	1	1	Cell Physiology and Nerve Cell Physiology	Introduction to cell physiology Nerve cell physiology Function , Synapses, mechanisms of conduction
2	1	1	Muscle Physiology	Muscle physiology function and mechanisms of contraction Types of contraction
3	1	1	Blood Physiology	RBC, Structure and function, Hb, WBC, Structure and function
4	1	1	Blood Physiology	Innate Immunity and acquired immunity Structure, types and function of Antibodies, types of T-Cells
5	1	1	Blood Physiology	Hemostasis and blood types
6	1	1	Gastrointestinal Physiology	Introduction to GI physiology, Mechanisms of GI tract movements and reflexes GI secretions, Hormones and regulations
7	1	1	Gastrointestinal Physiology Respiratory System	Digestion and Absorption Introduction to RS, Mechanisms of Respiration, Inspiration and Expiration
8	1	1	Respiratory System	Types of Respiration and gases exchange Regulation of Respiration
9	1	1	Endocrine Physiology	Introduction of endocrine system Pituitary hormones and its functions in the body
10	1	1	Endocrine Physiology	Thyroid hormones, Adrenal cortex, Pancreas and Para thyroid hormones Gonadotropins, secretions and functions

11	1	1	Reproductive Physiology	Female reproductive physiology, Menstruation Pregnancy, Parturition and lactation
12	1	1	Reproductive Physiology	Male reproductive system, spermatogenesis Fertilization and gestation Male sex hormone (Testosterone) Male sexual act
13	1	1	Urinary System Physiology	Introduction to Urinary System, Filtration Reabsorption of water and materials in tubules
14	1	1	Cardio Vascular System	Introduction to CVS, Cardiac Cycle, Action Potential, Automatism
15	1	1	Cardio Vascular System Central Nervous System	Blood Circulation Major and Minor Blood Pressure, Pulse, Capillary Circulation
16	1	1	Central Nervous System and Special Senses	Introduction to CNS physiology, Sensory and Motor Functions Autonomic Nervous system (Sympathetic and Para sympathetic) Special Senses Vision Hearing Taste and Smell

Text Books:-

- 1-GUYTON AND HALL Textbook of Medical Physiology, Twelfth Edition, 2011.
2. Best and Taylor's physiology basic of medical practice JB.
3. Review of Medical physiology- W.F.Ganong-Lange Medical Book.

Principle of Anesthesia

Goals:-The main goal of this subject is understanding of anesthesia basic informations about different felids that started from anesthesia history up to complication of anesthesia. Describe the medical gas supply, machine of anesthesia, breathing system, facial mask, and airway.

Course description

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

This course will develop student knowledge, skills and expertise essential for successful performance of technologists in the fields of anesthesia...

Learning objectives

- After completion of this course students will be able to:-
- Understandings of importance anesthesia.
- Safety margin for the patients.
- Preparation of patient for anesthesia.
- Techniques of anesthesia.
- Medication of anesthesia and complications.

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self- directed study

Evaluation:

- - Written final examination 60%
- - Skills lab examination 20%
- - Mid -term: (Attendance, discipline, class activity and 20%
Preparation - including answering oral questions, quiz, etc.

Source needed:

- Practical anesthesia handbook (prepared by related department)
- Computer, video projector, whiteboard and whiteboard, equipment of anesthesia.

Principle of Anesthesia	
Discipline	Anesthesia
Department	Anesthesia
Title	Principle of Anesthesia

Pre- requisites			Physiology	
Code			AT323	
Class			2	
Semester			Spring	
Credits 4			Theory	2
			Practical	2
Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1	2	2	Introduction to Anesthesia	General information, importance of anesthesia, safety margin for the patients
2	2	2	History of Anesthesia	Prehistoric era, inhalation anesthesia era, regional anesthesia era, intravenous anesthesia era, anesthesia era.
3	2	2	Surgical Team.	Standard of surgical team, job description of surgical team, coordinator.
4	2	2	Safe practice of anesthesia.	Golden rules of anesthesia recommended, Minimum requirement for safe anesthesia practice.
5	2	2	Safe practice of anesthesia.	Safety during anesthesia, accidents during anesthesia, monitoring during anesthesia.
6	2	2	Pre-Op preparation.	Pre anesthetic assessment, history, past disease/surgery and systemic examination.
7	2	2	Premedication.	Opioids analgesia, antihistaminic, non-opioids analgesia, anti-anxiety agents, benzodiazepines antagonist, anti-nausea medications.
8	2	2	Pre anesthetic Order.	Patients:-Informed consent,NPO,Advantage,drugused, Special instructions

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

9	2	2	Factors affecting patients medical condition	Critical patients, immunosuppressive drug users, Geriatric patients, drugs systemic effects
10	2	2	Operating room.	Operating suites, supporting accommodation, access zones, patient transport,ventilation.operation area illumination
11	2	2	Techniques of Anesthesia	General anesthesia, loco regional anesthesia, anesthesia components
12	2	2	Medication used in anesthesia	Inhalation anesthesia,Interavenous anesthesia
13	2	2	Medication used in anesthesia	Type of curare,opoids antagonist, vasopressors
14	2	2	Balance anesthesia	Triangle of anesthesia, pain, recovery.
15	2	2	Day care anesthesia	Special features,setup,advantage,disadvantage,future
16	2	2	Complication of Anesthesia	Intraoperative complication and postoperative complication.

References

- 1-Oxford Handbook of Anesthesia, Keith Allman, Iain Wilson.
- 2-Clinical Anesthesiology, Edward Morgan, aged Mikhail, Michael J Murray.
- 3-Understanding of anesthesiology, short text book of anesthesia.

Health Management

Goals:-The management and leaderships module is designed to provide students with the tools to analyze and practice management and leadership as it related to health and social care.

Course description:

In this course, students will learn how to take history and perform physical examination of various body systems so that students will be able to the differentiate health and sickness status.

Learning Objectives:

At the end of the course, the student would be able to:

- Understand the importance of management in health care and basic concept of management
- Understand the role, skills and qualities of managers and describe three fundamental rules for managing others
- Describe the function of management; review and critically analyze management and leadership theories and how they can be applied in practice;
- Discuss basics of human resource management and financial management
- Understand public health and application in health care organization

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self-study

Evaluation:

- | | |
|-----------------------------------------------------------------------------------------------|-----|
| • Written final examination | 60% |
| • Assignments, seminar, project or practical exercises
(With practical assessment methods) | 20% |
| • Class activity, tests during the semester attitude in contributing
To group work. | 20% |

Source needed:

- Computer, video projector, whiteboard and marker
- Various OPDs and IPWs.
- Guidebook of health management skills for students and teachers.

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

- Checklist of skills.

Health Management				
Discipline		Anesthesia		
Department		Public Health		
Title		Principle of Management		
Pre-requisites		All module of Public Health		
Code		AT324		
Class		2		
Semester		Spring		
Credit	1	Theory		1
		Practical		0
Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1	1	0	Introduction	Brief history of management, Health Management, scope and need for applying the management, concept in health care
2	1	0	This basic of management	The basic of good management complicated easy management and simple heart management concept, fundamental roles of management, nature of management, need of management.
3	1	0	Management skills and qualities	Conceptual skill, human skills, managerialcompetences, technical skill, manager's roles and qualities.
4	1	0	Menageries roles	Inter personal, informational and decision making roles of managers
5	1	0	Management factions	Principle of management ,factions,leading,organizing,cordinaitaing And con trolling.

6	1	0	Planning	Difination,importance of planning,planinig cycle, planning strategise,and types of planning
7	1	0	Self-management	What is self –manaegemnt?skills and requirements for effective self-management And it is importunes and successful management
8	1	0	Applicication of public health and health care	What is public health? Scopes of public health.importence of public health in health care organizations.
9	1	0	Application of public health	Appling public health concepts in management of health care organizations.
10	1	0	Team building	Deferent among team and group, team developing of steps, forming, storming, norming, performing, and skills required in building a team.
11	1	0	Organization	Definition of organization, types of organizations, factions, external and internal factors effect.
12	1	0	Human resources management	Activities of human resources management, planning, job analysis, human cycle, human resources management, sector, development.
13	1	0	Requirement process	Key stages in the requirement and selection process, job descriptions, person’s specifications’, advertisement, further particular, short listing, interview references, final division, discriminations, febraitesim, nepotisms and corruptions.
14	1	0	Communications	Importance of communications in management and leaderships,types,chalinge,
15	1	0	Hospital management	Introductions of hospital system,compenetes,performance,indicator,

16	1	0	Hospital management	Hospital administrative problems, wastemanagement, intrudaction of HMIS, impotence of HMIS
----	---	---	---------------------	--------------------------------------------------------------------------------------------

Text Books:-

1. Managing health services, Nick Goodwin, Reinhold Gruen & Valerie Iles, London School, 2006
2. Organizational Management, F. Feroz, Gh. Natiq and Sh. Shahim, 2009
3. Teaching of Public Health in Medical Schools, Report of the Regional Meeting Bangkok, Thailand, 8–10 December 2009

Second Year Second Semester Islamic Studies

Goals: The Islamic studies provides a basic and advanced information about Islam and his relationship with medicine in individual fields.

Learning objectives:

- The students will be able to know:-
- The Islamic political system and general information related to it.

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self- directed study

Evaluation:

- - Written final examination 80%
- - Mid -term: (Attendance, discipline, class activity and Preparation – including answering oral questions, quiz, etc. 20%)

Source needed:

- Islamic books (prepared by related department)
- Computer, video projector, whiteboard and whiteboard

ISLAMIC STUDIES			
Discipline		Religious	
Department		Islamic studies	
Title		Political System In Islam	
Pre-requisites		None	
Code		AT425	
Class		2	
Semester		Fall	
Credit 1		Theory	1
		Practical	0
weeks	Hours		Topics and Descriptions
	Theory	Practical	
1	1		Political System in Islam

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

2	1		Politics & Religion
3	1		Definition of sharia
4	1		General Information Related Politics
5	1		Individual Political rights, Counsel in Islam
6	1		Characteristics of Political Leaders, Needs for Selection of the Leader
7	1		General Information related Dectatorate.
8	1		Responsibilities of Islamic State
9	1		Characteristics of Islamic Governments
10	1		Islam and Democracy
11	1		Basics of Internal Diplomacy in Islam
12	1		Basics of Foreign Diplomacy in Islam's
13	1		Memorization and translation of Surah 61 – 84
14	1		Memorization and translation of Surah 78 – 84
15	1		Special Duaa (prayers) according to Hadith and Sunna
16	1		Special Duaa (prayers) according to Hadith and Sunna

English

Goals: -By the end of this course students should be able to enhance their language skills of speaking, reading, listening and writings and also they will be able to use Medical dictionaries such as Dorland, Oxford etc. . . .

Course description:

This course is designed to enhance the oral communication skills of the students through discussion, and further improve their writing skills using a variety of nursing and non-nursing texts and appropriate of grammar and evaluate the student's development their listening, speaking, reading and writing skills relate to the nursing context. The focus is contextual grammar, summarization and presentation skills.

Learning Objectives

At the end of this course students will be able to:-

- They will be able to give presentations on different kinds of topics in English.
- study English medical books and journals.
- write medical articles.

Teaching learning strategies:

- Lecture

- Class and small group discussion
- Audio-visual aids
- Role play
- Self-study

Evaluation:

- Written final examination 60%
- Assignments, seminar, project or practical exercises 20%
(With practical assessment methods)
- Class activity, tests during the semester attitude in contributing 20%
To group work

Source needed:

- Computer, video projector, whiteboard and marker
- Handbooks related to english studies.

English				
Discipline		Anesthesia		
Department		English department		
Title		ESP/Professional English & General English		
Pre-requisites		None		
Code		AT426		
Class		2		
Semester		Fall		
Credit 1		Theory		0
		Practical		1
Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1		1	Physical examination	<p>Speaking : talking about family relationship and characters</p> <p>Physical examination: giving instruction.</p>

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

				Grammar: reported speech , phrasal verbs.
2	1	Mental state examination	Mental state examination :psychiatric disorders Grammar: reported speech , phrasal verbs. Speaking: talking about some typical questions from a mental state examination.	
3	1	Discussing treatment	Time ;talking about rules and regulation Discussing treatment : Grammar; modal axe , prep of time .,reading passages	
4	1	Giving bad news	Journey ; talking about reasons for traveling Giving bad news : principles of giving bad news Grammar; modals ,for deduction ,/ reading passages	
5	1	Data presentation	Talking about rules of power point presentation Data presentation :referring to a table or figure Grammar; modals verbs,	
6	1	Research article,	Basics : talking about eating habit ,anecdote ,designing a meal Research article: line graph. Grammar: : quantifiers ,countable uncountable noun /reading passage	
7	1	Abstracts	Talking about Abstracts : structured abstract Grammar: : quantifiers ,countable uncountable noun reading passage	
8	1	Conference presentation	Communication : making phone call talking about male female Conference presentation : the structure of a presentation Grammar. Real condition ,first condition and zero condition	
9	1	Case presentation	Style ;; talking about getting ready to go out Case presentation :section of a case presentation Grammar. Unreal condition /reading passage	
10	1	Case presentation	Style ;; talking about getting ready to go out Case presentation : bedside presentation Grammar. Unreal condition ,reading passage	
11	1	Medical abbreviations 1	speaking; talking about importance of abbreviations in medicine	

				practice Medical abbreviations: Grammar : future tense reading passage
12		1	Medical abbreviations 2	Be familiar with medical symbols Read Medical abbreviations list Talk about abbreviations difference with symbols
13		1	descriptive paragraph	Paragraph writing : Kinds of paragraphs – expository paragraph, descriptive paragraph ,Narrative paragraph and explanatory paragraph /central idea /supporting sentences/conclusion
14		1	Review	Review. General review of the previous lessons and solving the problems Tests and quizzes.
15		1	Appendix 1	Talking about types of medication Difference between sign and symptoms
16		1	Appendix 2	Grammar: verbs used in instruction Read some Lay terms and definitions

Text Books:-

1. Glen dinning .H.E. & Howard .R, (2007), Professional English in use. Cambridge: Cambridge university press.
2. English grammar by Betty Scamper, 3rd edition
3. Essential grammar in use by Roy moundMurphy, 3rd edition, 2007.

Hematology

Goals:-The aims of understanding this subject is know everything about blood and blood components in human body fluids and laboratory necessity.

Course description

This course are describing the basic concepts of hematology with principles of blood testing: both manual and currently available fully automated diagnostic tools, the course includes definition of the science of hematology, hematopoiesis, blood components and function...

Learning Objectives

At the end of this course the students will be able to:-

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

- Explain different parts of blood.
- Explain Hematopoiesis, Erythropoiesis, Hemoglobin, plasma proteins.
- Explain Ig, hemostasis, fibrin lytic system and routine laboratory practice in Hematology.

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self- directed study

Evaluation:

- - Written final examination 60%
- - Skills lab examination 20%
- - Mid -term: (Attendance, discipline, class activity and Preparation - including answering oral questions, quiz, etc. 20%)

Source needed:

- Equipped hematology Lab: microscope, bain-marie water boiler, hemoglobin meters, micro centrifuge, shakers, ECG recording device, centrifuge, etc.
- Practical hematology handbook (prepared by related department)
- Computer, video projector, whiteboard and whiteboard

Hematology	
Discipline	Anesthesia
Department	Medical Technology
Title	Hematology Principles
Pre-requisites	Physiology
Code	AT427
Class	2

Semester			Fall	
Credit 2			Theory	1
			Practical	1
Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1	1	1	Introduction	Definition of Blood Blood functions
2	1	1	Some importance blood physical characteristics	Hematocrit, Blood viscosity, Blood osmotic pressure, ESR, Blood volume
3	1	1	RBC and WBC morphology	Types of cell Granulocyte (neutrophil, basophile, eosinophil) A granulocyte (lymphocyte, monocyte) RBC
4	1	1	Hematopoiesis	Myeloid line (Erythropoiesis, thrombopoiesis, leucopoiesis) Lymphoid line (B-lymphocyte, T-lymphocyte)
6	1	1	Hemoglobin	Hemoglobin synthesis Hb function Hbdetermination using colorimetric and non-colorimetric methods
7	1	1	Hemoglobin	Factors affecting Hb synthesis Type of Hb chains, abnormal Hb and hemoglobinopathies, Hemoglobin derivatives
9	1	1	Plasma protein	Types of plasma protein Separating of plasma proteins (salting out, electrophoresis, immunoelectrophoresis, cohnmethod, ultracentrifugation)

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

				Study of specific plasma proteins (albumin, haptoglobuline, transferrin, ceruloplasmin, lipoproteins)
10	1	1	Immunoglobulin	Introduction Types of Ig (IgG, IgA, IgE, IgD, IgM) Origin and function of plasma proteins Carrier function
11	1	1	Hemostasis and coagulation	Definition of hemostasis Stages of hemostasis Hemostatic factors Intrinsic pathway
12	1	1	Hemostasis and coagulation	Extrinsic pathway Common pathway Inhibitors of thrombin activity Anticoagulant of cu marine Hemophilia A and B
13	1	1	Fibrin lytic system	Lysis of fibrin by plasmin Role of streptokinase Fibrin lytic pathway
14	1	1	Laboratory practice of Blood coagulation and thrombolysis	PT, APTT,TT,INR, CT,BT,retraction time
15	1	1	Blood PH	Definition of Acid Definition of Bases Buffer system of blood Role of blood buffer system in regulation of blood PH
16	1	1	Blood PH	Role of pulmonary system in regulation of blood PH Role of kidneys in regulation of blood Acidosis Alkalosis

Text Books:-

- 1-Dacie and Lewis practical hematology, eleventh edition, 2011
- 2- Hematology clinical principles and applications, fourth edition, 2012
- 3- Hematology in clinical practice, fifth edition, 2010
- 4- Hematology: A pathophysiology approach, 2012

Clinical Biochemistry

Goals:-The medical biochemistry course introduces the fundamentals of biochemistry as applied to medicine, we explore the basic amino acid building blocks and how differences in structures are manifested into a variety of functional states...

Course description:

During this course, the structures and functions of biological molecules of the body, biochemical reactions and regulation mechanisms of a sound body, will be presented. Moreover, the students will learn how to perform biochemical tests applicable to nursing. This course, along with other basic biological sciences, provides a better understanding of function and structures of the human body for integration into theoretical and clinical nursing. This course is comprised of theoretical and practical lessons.

Learning Objectives:

At the end of this course students will be able to:-

- Describe metabolism of carbohydrate.
- Lipid and protein, Explain biosynthesis of DNA and RNA.
- Perform relevant biochemical test.

Teaching learning strategies:

- Lecture
- Discussion
- Small group projects
- Presentation
- Self-study

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

- Laboratory work and demonstration

Evaluation:

- Written final examination 60%
- Skills lab examination 20%
- Mid -term: (Attendance, discipline, class activity and Preparation - including answering oral questions, quiz, etc. 20%)

Source needed:

- Computer, video projector, whiteboard and marker.
- Equipped educational biochemistry lab.
- Practical Biochemistry handbook (prepared by related department).

Clinical Biochemistry			
Discipline		Anesthesia	
Department		Medical Technology	
Title		Biochemistry	
Pre-requisites		Chemistry	
Code		AT428	
Class		2	
Semester		Fall	
Credit 2		Theory	1
		Practical	1
Ks Wee	Hours	Topics	Descriptions

	Theory	Practical		
1	1	1	Metabolism of Carbohydrates & Glycolysis	Introduction. Introduction, Reactions, Regulation and Coenzymes of glycolysis Reversion of Glycolysis Formation and Fate of Pyruvic.
			Citric Acid Cycle	Reactions, Regulation
2	1	1	Citric Acid Cycle	Bioenergetics (Calculation of ATP Moles with Glycolysis and Citric Acid Cycle..
			Electron transport system and oxidative phosphorylation	Mechanisms of the control of Glucose combustion
3	1	1	Hexose Mono Phosphate (HMP) Shunt (Pentose Phosphate Pathway):	Introduction , Regulation, Metabolic Significance
			Metabolism of Glycogen Glycogenesis. Glycogenolysis.	Introduction, Reactions, Regulation.
4	1	1	Metabolism of Glycogen Glycogenesis. Glycogenolysis.	Regulation of Glycogen Metabolism, Inherited Diseases (Glycogen Storage Diseases or GSDs).
			Metabolism of Galactose: Metabolism of Fructose:	Introduction , Metabolic Pathway, Biosynthesis of Galactose Introduction, Metabolic Pathway
5	1	1	Metabolism of Lipids	Introduction, Activation of Fatty Acid, Carnitine Role in F.A, Beta Oxidation.
			Formation and Utilization of Ketone Bodies ,Calculation of Energy of Fatty Acids	Ketosis or Ketoacidosis Introduction, Biosynthesis of Saturated F. As., Biosynthesis of Unsaturated F. As...
6	1	1	Biosynthesis of Triglycerides Biosynthesis of Phospholipids:	(Triacylglycerol's).Biosynthesis of Glycerophospholipids (Lecithin, Phosphatides Serine, Phosphatides Ethanolamine, Cardiolipin, Plasminogen's).
			Biosynthesis & Catabolism of Sphingolipids.	Biosynthesis of Sphingosine, Biosynthesis and Catabolism of Sphingolipids (Ceramide and Sphingomyelin, Glucocerebroside, Galactocerebroside)

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

				tide, Ceramide Lactoside, Ceramide Tri Hexose and Gangliosides
7	1	1	Prostaglandins Prostacyclins & Thromboxane's. Leukotriene's (LTs). Control of Fat Metabolism	(Introduction, Structure, Metabolism and Functions. Chemistry and Functions.
			Role of Liver in Lipid Metabolism.	
8	1	1	Plasma Lipoproteins and their Metabolism	Lipotropic Factors, Role of Adipose tissue in Fat Metabolism, Metabolism of Free Fatty Acids.
			Metabolism of Cholesterol:	Introduction, Biosynthesis Regulation. Functions of Cholesterol, Transport of Cholesterol.
9	1	1	Metabolism of Proteins and Amino acids:	Introduction, Nitrogen Balance,
			Metabolism of Proteins and Amino acids:	Dissimilation of Amino acids or N-Catabolism of Amino acids [Transamination, Deamination (Oxidative and Oxidative)]
10	1	1	Urea Formation in Krebs'- Henseleit (Urea)	Biosynthesis, Regulation of Urea Synthesis, cycle.
			Urea Formation in Krebs'- Henseleit (Urea) Cycle,	, Clinical Significance of Urea,
11	1	1	Urea Formation in Krebs'- Henseleit (Urea) Cycle,	Inherited Disorders Associated with Urea Cycle.
			Metabolism of Amino Acids:	Glycine, Creatine and Creatinine, Alanine, Valine, Isoleucine, Serine, Methionine
12	1	1	Metabolism of Amino Acids:	Cysteine, Glutamic acid, Glutamine, Aspartic acid, Asparagine, Arginine, Lysine
			Metabolism of Amino Acids:	Ornithine, Citrulline, Histidine, Tryptophan, Praline, Hydroxy Praline, Phenylalanine, Tyrosine
13	1	1	Metabolism of Pieces which have One Carbon.	Choline, betadine, serine, thymine
			Metabolism of Pieces which have One Carbon.	Purine, methionine, methanol, acetone

14	1	1	Metabolism of Pyrimidine's and Purines:	Biosynthesis and Catabolism of Pyrimidine's.
			Metabolism of Pyrimidine's and Purines:	Biosynthesis and Catabolism of Purines. Uric acid Metabolism and clinical Disorders of Pu Pyrimidine's Metabolism
15	1	1	Biosynthesis of DNA.	Biosynthesis of DNA, hydrolysis of DNA
			Biosynthesis of RNA	Biosynthesis of RNA, mRNA, tRNA, rRNA.
16	1	1	Mutation	Silence mutation and non-effective mutation
			Synthesis of Proteins	Initial stage of protein synthesis, Continue stage stage of protein synthesis

Text Books:

- 1-Harper's biochemistry, 29th edition, 2012
- 2- Medial biochemistry, second edition, 2006
- 3- Lehninger A.L. biochemistry, the molecular basis of cell structure and function, fifth edition, 2008
- 4- LubertStryerBiochemistry, Fifth edition, 2002

Pathology

Goals:-The broad goals of teaching graduates pathology are to import the knowledge, skills and attitudes in the student to understand the etiopathology, morphology and pathological concepts related to various common disease.

Course description:

This is a laboratory-based course which provides students with the opportunities to build on the concepts and knowledge of altered physiological mechanisms and their impact on the functional status of the body. It also deals with the responses that participate in manifestation of disease. The

Title			Systemic pathology1	
Pre-requisites			General Pathology	
Code			AT429	
Class			2	
Semester			Fall	
Credit 3			Theory	1
			Practical	2
Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1	1	2	Blood vessels, structure and Function of blood vessels, blood pressure regulation, and hypertensive vascular disease Vasculitis and disorders of blood	Vascular organization, Endothelial cells Vascular smooth muscle cells, Epidemiology of. hypertension, Pathogenesis, Morphology
				Noninfectious vasculitis, Infectious vasculitis Raynaud phenomenon, Myocardial vessel vasospasm
2	1	2	Heart ,Overview of heart disease, Heart failure & Ischemic heart disease Hematopoietic and lymphoid systems, red cells disorders	Left-side heart failure, Right-side heart failure, Angina pectoris, Myocardial infarction, Chronic ischemic heart disease, and sudden cardiac death
				Anemia of blood loss, Hemolytic anemia

Text Books:

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

3	1	2	Red Cells Disorders White cell disorders	Anemia of diminished erythropoiesis
				Non-neoplastic disorders of white cells
				Neoplastic proliferations of white cells
4	1	2	Bleeding Disorder Lung	Disseminated Intravascular Coagulation Thrombocytopenia, Coagulation disorders
				Atelectasis, acute respiratory distress syndrome, obstructive versus restrictive pulmonary diseases
5	1	2	Obstructive lung (airway) diseases, Chronic interstitial (restrictive, infiltrative) lung Diseases Pulmonary infections	Emphysema, Chronic bronchitis, Asthma, and Bronchiectasis, Fibro sing diseases, Granulomatous diseases Pulmonary eosinophilia, Smoking-related interstitial Diseases.
				Community acquired acute pneumonias Community acquired atypical pneumonias Hospital acquired pneumonias, Aspiration pneumonia and lung abscess, Chronicpneumonia, Fungal Infections
6	1	2	Lesions of the upper respiratory Tract Oral cavity and gastrointestinal tract	Acute infections, Nasopharyngeal carcinoma Laryngeal tumors
				Oral inflammatory lesions, Proliferative and Neoplastic lesions, Diseases of Salivary glands
7	1	2	Esophagus	Obstructive and Vascular diseases
				Esophagitis, Esophageal tumors

			Stomach	Inflammatory disease of the stomach, Neoplastic disease of the stomach
8	1	2	Small and large intestines Appendix	Intestinal obstruction, Vascular disorders of bowel Diarrheal disease, Inflammatory intestinal disease Colonic polyps and Neoplastic disease
			Liver, gallbladder, and biliary tract	Acute appendicitis, Tumors of the appendix Clinical syndromes, Jaundice and Cholestasis Hepatic encephalopathy
9	1	2	Acute and chronic hepatitis Kidney and its collecting system glomerular disease	Viral hepatitis, Autoimmune hepatitis Drug/toxin-mediated injury mimicking hepatitis
				Clinical manifestations of renal diseases Mechanisms of glomerular injury and disease The nephritic and nephritic syndromes
10	1	2	Urinary outflow obstruction Tumors of the kidney Male genital system and lower urinary tract Penis,Scrotum,Testis, and Epididymis	Renal stones and Hydronephrosis Oncocytoma, Renal cell carcinoma, Clear cell carcinomas, Papillary renal cell carcinoma, Chromophobe renal cell carcinomas, and Wilms.tumor
				Malformations, Inflammatory lesions, and neoplasms of the Penis,Cryptorchidism and testicular atrophy, Inflammatory lesions, Vascular disturbances, and Testicular neoplasms

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

11	1	2	Prostate, Ureter, Bladder, and Urethra Sexually transmitted diseases	Prostitis, Benign prostatic hyperplasia, and Carcinoma of the prostate Ureter pelvic junction obstruction and Retroperitoneal fibrosis, on-neoplastic and Neoplastic conditions of the urinary bladder
				Syphilis, Gonorrhea, Nongonococcal urethritis and cervicitis, Lymph granulomavenereum, Cancroid (soft chancre), Granuloma inguinal, Trichomoniasis, Genital herpes simplex, and Human papillomavirus Infection
12	1	2	Female genital system and breast, vulva & vagina Cervix, Body of uterus	Vulvitis, Non-neoplastic epithelial disorders, and Tumors of the Vulva, Vaginitis and Malignant neoplasms of the Vagina
				Cervicitis, Endometritis, Adenomyosis, Endometriosis, Abnormal uterine bleeding, and Proliferative lesions of the endometrium and myometrium
13	1	2	Diseases of pregnancy Breast & breast tumors	Ectopic pregnancy, Gestational trophoblastic disease Preeclampsia/Eclampsia
				Fibrocystic change, Inflammatory processes. Fibro adenoma, Phyllodes tumor, Intraductal. Papilloma, and Carcinoma.
14	1	2	Endocrine system Pituitary Thyroid Gland	Hypopituitarism and pituitary adenomas Hypopituitarism, Posterior pituitary syndromes
				Hyperthyroidism, Hypothyroidism, Thyroiditis, Graves' disease, Diffuse and Multinodular goiter, and

				Neoplasms of the thyroid
15	1	2	Endocrine pancreas Adrenal cortex	Diabetes mellitus, Pancreatic neuroendocrine tumors
				Adrenocortical hyper function (Hyperadrenalism), Adrenal insufficiency, and Adrenocortical neoplasms
16	1	2	Adrenal medulla, Multiple endocrine neoplasia syndrome Skin, acute and chronic inflammatory dermatitis	Tumors of the adrenal medulla, Multiple endocrine neoplasia type 1, Multiple endocrine neoplasia type 2
				Urticarial, Acute eczematous dermatitis, Psoriasis, and Infectious dermatoid

1. Netter Elastrator Human Pathology, MaximillianL.Buje MD.
2. Robbins Basic Pathology Vinay Kumar.

Basic Anesthetic Technique

Goals: -The main purpose of this subject is to understanding the different kinds of equipment's used in anesthesia and how to prepare it and how to use it in anesthesia the skills required for basic resuscitation for adults, children, and infants. PR is essential During resuscitation of patient experiencing a cardiac arrest.

Course description

This course will develop student knowledge, skills, expertise include basic and advanced Airway management, positioning and preoperative patient preparation.

Learning Objectives

After completion of this course students will be able to:-

- Understanding of anesthetic equipment.
- Understanding of position during anesthesia.
- Understanding of basic resuscitation review.
- Understanding of cardiac arrest in operation room and allergic reactions.

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self- directed study

Evaluation:

- - Written final examination 60%
- - Skills lab examination 20%
- - Mid -term: (Attendance, discipline, class activity and Preparation – including answering oral questions, quiz, etc. 20%

Source needed:

- Basic anesthetic technique handbook (prepared by related department)
- Computer, video projector, whiteboard and whiteboard.

Basic Anesthetic Technique	
Discipline	Anesthesia
Department	Anesthesia

Title		Basic Anesthetic Technique		
Pre-requisites		Principle of Anesthesia		
Code		AT430		
Class		2		
Semester		Fall		
Credit	4	Theory	2	
		Practical	2	
Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1	2	2	Preparing for anesthesia	General equipment check, patient related equipment check, preoperative assessment.
2	2	2	Operating table positioning	Different position of the patients(supine,lithotomy,prone)during operation in OT
3	2	2	Poisoning and monitoring during anesthesia	Preventing injury to the patient, Monitoring Guedels signs/stages of anesthesia, Monitoring neuromuscular blocked, vital signs, pulse oximetry, capnography.
4	2	2	Airway management	Preoperative assessment, features of potential difficult intubation, artificial airways
5	2	2	Airway management	Tracheal intubation, pediatric versus adult airway, pediatric endotracheal tube,recommendation,preparing for intubation, steps of intubation
6	2	2	Airway management	The patient with an upper respiratory infection, pharmacologic aspiration, prophylaxis, cricoid pressure and rapid sequence, laryngeal mask, airway minimum anesthetic airway equipment.
7			Tracheostomy and Cricothyrotomy	Indication of tracheostomy , technique of tracheostomy, indication of

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

				cricothyrotomy, technique of cricothyrotomy
8	2	2	Maintenance of airway in unconscious patients	Airway, recovery position and usages of different instrument for management of unconscious patients
9	2	2	Loco regional anesthesia	General information on local anesthesia, infiltration and topical anesthesia ,metheamoglobine,toxicity of LAT,
10	2	2	Spinal Anesthesia	History,types,druges,topicalanesthesia,needles,catheters,techniques and complication
11	2	2	Basic Resuscitation Review	Adult Respiratory Arrest Adult CPR
12	2	2	Basic Resuscitation Review	Rescue breathing for child and infants child /infant CPR
13	2	2	Neonatal Resuscitation	APGAR Score, Neonates at risk, care of the neonate
14	2	2	Cardiac arrest in operation room	Cardiac arrest without an ECG in adults,symphomaticbradycardia, ventricular tachycardia and fibrillation, Adult a systole
15	2	2	Cardiac arrest in operation room	Cardiac arrest without an ECG in pediatic,symphomaticbradycardia, ventricular tachycardia and fibrillation, pediatic a systole
16	2	2	Allergic Reaction	Allergic reactions during anesthesia and treatment

References:

- 1-Oxford Handbook of Anesthesia, Keith Allman, Iain Wilson.
- 2- Clinical Anesthesiology, Edward Morgan, aged Mikhail Murray.
- 3-Understanding anesthesia, Short text book of Anesthesia.

4-Miller basic of anesthesia.

Principle of Surgery

Goals:-The surgical clerkships is designed to introduce to the theoretical and skills aspects of surgical patient care. Emphasis is placed on the underlying pathophysiology rather than technical aspects. Students are fully involved in the daily care of surgical patients.

Course description

This course provides theoretical knowledge for the application of essential operative skills...Understand and adhere to proper draping, preparing for surgical procedure...

Learning Objectives

Student will be able to Understand:-

- Principles to complete the file of surgical patient.
- General responses to injury and acute illness, Aseptic Techniques.
- Pre & post-operative Care, postoperative complication...

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self- directed study

Evaluation:

- - Written final examination 60%
- - Skills lab examination 20%
- - Mid -term: (Attendance, discipline, class activity and Preparation - including answering oral questions, quiz, etc. 20%)

Source needed:

- Equipped Lab.
- Practical surgery handbook (prepared by related department)
- Computer, video projector, whiteboard and whiteboard.

Principle of Surgery				
Discipline		Anesthesia		
Department		Anesthesia		
Title		Principle of Surgery		
Pre-requisites		Basic Biomedical Sciences		
Code		AT431		
Class		2		
Semester		Fall		
Credit 4		Theory		2
		Practical		2
Weeks	Hours		Topics	Descriptions
	Theory	Practical		

1	2	2	Principles to complete the file of surgical patient	Taking History of the patient Physical exam of the patient, provisional diagnosis, special exam. clinical diagnosis, treatment, prognosis, follow up, termination
2	1	1	General responses to injury and acute illness	Introduction Clinical responses to tissue injury Initiating factors Inflammatory responses Hormonal responses Metabolic effect Modification of responses, General anesthesia, regional anesthesia,
2&3	3	3	Aseptic Techniques(Antisepsis& Asepsis)	Antisepsis , definition, mechanical antiseptics, chemical antiseptics, ,physical antiseptics Biological antiseptic, Antibiotics Asepsis ,Disinfection, sterilization Techniques and Methods Scrubbing up, gowning, gloving , preparation of surgical area operative theatre ,infection control in surgical ward& in the hospital
5&6	3	3	postoperative complication	Introduction wound complication hematoma sarcoma wound dehiscence A-systemic risk factors B-local risk factors C- diagnosis Respiratory complications Atelectasis Pulmonary aspiration Postoperative pneumonia Post-operative pleural effusion and pneumothorax Fat embolism Cardiac complication Peritoneal complications Gastric dilatation Bowel obstruction Post-operative pancreatitis Post-operative hepatic dysfunction

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

				<p>Post-operative cholecystitis Clostridium deficit colitis Postoperative par otitis Urinary complications Postoperative urinary retention Urinary tract infection Complication of intravenous Air embolism Phlebitis Post-operative fever</p>
7	1	1	Dressing	<p>Dressing; goals,Purpose of Wound Dressings, TYPES OF DRESSINGS:primary dressings,Secondary dressings ,One layer dressings, Skin closure dressing (island dressing), Dry sterile dressing , Three layer dressings, Pressures dressing, Stent dressing , Bolster/tie-over dressing, Wet-to- dry dressings, Wet-to-wet dressings, Vacuum-assisted dressings changing the dressing</p>
7	1	1	Blood – borne viruses and the surgeon	<p>Introduction Risk for surgeons Risks for the patient of acquisition of infection during surgery Acquired immunodeficiency syndrome Viral hepatitis B&C</p>
7	1	1	Surgical metabolism and nutrition	<p>Introduction Nutrient requirement Nutritional pathophysiology Enteral nutrition therapy Parenteral nutrition therapy 1-peripheral parenteral nutrition 2-Total parenteral nutrition</p>

7	1	1	Organ transplantation	<p>Introduction Kidney transplantation Heart transplantation Lung transplantation Liver transplantation Pancreas transplantation</p>
8	1	1	Minimally- invasive surgery	<p>The Minimally-Invasive Team Physiology Laparoscopy Thoracoscopy Anesthesia Energy Sources for Endoscopic Patient Positioning Special Considerations Robotic Assistance Economic of Minimally- Invasive Surgery</p>
8	1	1	Bleeding disorder and blood transfusion	<p>Bleeding disorder Clinical assessment of bleeding tendency Laboratory testing of hemostasis Vessel wall and connective tissue defect Platelet defect Preparing a severely thrombocytopenic patient for emergency surgery Abnormalities of coagulation factors Blood transfusion definition, blood groups compatibility transfusion route, indication & contraindications Deferent forms of transfusion</p>
9	1	1	Respiratory emergencies	<p>Respiratory failure Definition,Diagnosis,Path physiology Oxygenation A etiology of respiratory failure Preventive measures Management of respiratory failure Adult respiratory distress syndrome Airway obstruction, Pleural collection A etiology ,Diagnosis</p>

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

9	1	1	Cardiac emergencies	<ul style="list-style-type: none"> -Introduction -Preoperative myocardial ischemia A etiology, Management, Heart failure Management ,Disturbances of cardiac rhythm A etiology ,Bradycardia ,Management -Supraventricular tachycardia Management ,Cardiac arrest ,Cardiac tamponed ,Pulmonary embolus, Venous air embolism ,Penetrating injuries of the great vessels
10	1	1	Shock	<ul style="list-style-type: none"> Definition, etiology, classification, hypovolemic shock: ,Septic shock : path physiology , diagnosis , treatment , neurogenic shock ,psychogenic shock , anaphylactic shock
10	1	1	Primary care of the injured patient	<ul style="list-style-type: none"> -Demographics of trauma -Biomechanics of injury and the principles of accident prevention, Specific trauma events, Road traffic accidents, alcohol and drugs ,Falls from a height -Prehospital trauma care -Trauma centers and destination for the trauma patient,-Initial assessment and treatment in the accident and emergency department

11	2	2	Abdominal emergencies	<p>Intraperitoneal sepsis Introduction ,Intra- abdominal sepsis Advanced diffuse peritonitis Abdominal abscesses ,Hernia Strangulated inguinal hernia Strangulated femoral hernia Stomach and duodenum Acute gastric dilatation ,Gastric Volvulus Acute Gastrointestinal bleeding acute cholecystitis and biliary colic Acute pancreatitis ,Acute appendicitis Intestinal obstruction Abdominal trauma , clinic, principles in diagnosis ,penetrating trauma of the abdomen , Gunshot wounds</p>
12	1	1	Chest emergencies	<p>Airway obstruction chest trauma, chest wall trauma -hemothorax,pneumothorax,,Esophagus Acute dysphagia, Esophageal perforation - Corrosive injuries of the esophagus</p>
12	1	1	Head and Neck Emergencies	<p>Head injuries', introduction, forms of head trauma ,care of head trauma patients, reanimation, evaluation, diagnosis study, treatment, Spinaltrauma, The neck neck wound, Closed injury in the neck</p>
13	1	1	Wounds	<p>Definition , clinic , classification Acute wounds, open ,close, complex War wound: entertains& exit whole mechanism of missile wound, , blast injury Chronic wound : ulcer, bed sore</p>

13&14	2	2	Burn	<p>Definition, etiology Pathophysiology of thermal burn , metabolic reaction, clinic, treatment, definitive treatment, fluid management Frost bite:-Definition, etiology, pathophysiology, clinic, treatment Electric burn:- etiology, pathophysiology, clinic, treatment Chemical burn:- etiology, pathophysiology, clinic, treatment . Radiation burn:-, immediate action, on normal tissue, systemic reaction, prevention, treatment, late reaction to radiation</p>
14	1	1	Vascular Emergencies	<p>Venous emergencies, Introduction Classification, Clinicalfeatures, Management Superficial Thrombusphlebitis, Deep venous thrombosis, Pulmonary embolism ,Vascular injuries,Introduction,Arterial injury Accidental intra –arterial of drugs</p>
15	2	2	Surgical infection	<p>Definition, pathogenesis, Principles for treatment, sepsis Forms of surgical infection, lymphangitis, abscess, hydraadinitis, carbuncle, furuncle Phlegm on, anthrax, tetanus postoperative infections ,Hand infections</p>
16	1	1	Urological emergency	<p>urinary tract obstruction Upper urinary tract obstruction Lower urinary tract obstruction Trauma of urethra, urinary bladder , kidney & Genital emergencies, Acute urinary tract bleeding and infection,Abortion,Ectopic pregnancy, Uterine rupture Preeclampsia ,eclampsia torsion of ovarian cyst Trauma of uterus,</p>

Internal Medicine

Goals:-The goals of this course are to provide training in the discipline of internal medicine, to provide exposure to pathophysiology, diagnostic methods, used in this field. It focuses on diagnostic decision making, case presentation skills, history and physical skills, Therapeutic decision making, communication skills, and professionalism.

Course description:

The most important targets of internal medicine, main disease, groups of patients, structure of internal ward ,making the students familiar with patients difficulties and medical staff, getting skills in the medical history taking(discussions and talks to the patients).

Learning Objectives:

At the end of this course student will be able to:-

- know about Physical examination, vital sign.
- Common Symptom, Examination of respiratory.
- Examination of cardiovascular system, ECG....

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self- directed study

Evaluation:

- - Written final examination 60%
- - Skills lab examination 20%
- - Mid -term: (Attendance, discipline, class activity and 20%
Preparation - including answering oral questions, quiz, etc.

Source needed:

- Practical internal medicine handbook (prepared by related department)
- Computer, video projector, whiteboard and whiteboard.

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

Discipline				Anesthesia		
Department				Respiratory		
Title				Internal Medicine1		
Pre-requisites				Basic Biomedical Sciences		
Code				AT432		
Class				2		
Semester				Fall		
Credit				Theory		2
				Practical		2
Weeks	Hours		Topics	Descriptions		
	Theory	Practical				
1	1	1	History Taking	History taking. Identification, chiefcomplaints, present illness. Past history, personal history. Occupational history review of system.		
2	1	1	Physical Examination	General physical examination, General inspection, examination of		
3	1	1	Vital sign	Temperature, Respiratory rate, Pulse, Blood pressure.		
4	1	1	Common symptom	Cough,Hemoptysis,Chestpain,Dyspnea,Cyanosis,Edema		
5	1	1	Common symptom	Abdominal pain, Flank Pain, Nausea, Vomiting, Hematemesis, M		
6	1	1	Physical examination of respiratory system.	Inspection,Palpation,Percussion,Auscultation		
7	1	1	Physical examination of cardiovascular system	Inspection,Palpation,Percussion,Auscultation		
8	1	1	Physical examination of cardiovascular system	Palpation of peripheral Artery, Burger test, Reynaud's phenomena vein,Trendelburgtest,DVT,SVT,Chronic vein insufficiency, Chron		
9	1	1	ECG	Interpretation of normal ECG .Rhythm, Rate, Axis, Waves, Interv		
10	1	1	ECG	Arrhythmias, PSVT, Atrial fibrillation, Atrial flutt		

11	1	1	ECG	Extra systole, RBBB, LBBB, RVH, LVH, Electrolyte imbalance.
12	1	1	Physical examination of Gastrointestinal system	Inspection,Palpation,Percussion,Auscultation
13	1	1	Physical examination of Gastrointestinal system	Palpation:-Liver. Spleen, Gallbladder, Kidneys, Abdominal mass, Fluid thrill.
14	1	1	Analysis of blood and urine	Blood examination:- Hb,RBC,WBC,Diffbloodsmear,Urea,Creatinin,FBS,Electrolytes,U
15	1	1	Physical examination of NS	The examination of 12 cranial nerve.
16	1	1	Physical examination of NS	The motor system, examination of sensation, the sympatric nerve s Miscellaneous test.
17	1	1	Effect Anesthesia on respiratory system.	Lung volumes and capacities, Volume-Related Airway collapse, F vital capacity, Effect of anesthesia on PM.
18	1	1	Pulmonary Risk factors.	General consideration. Obstruction pulmonary diseases.
19	1	1	Bronchial Asthma	Pre-Operative consideration. Pathophysiology, Treatment...
20	1	1	Chronic obstruction pulmonary diseases(COPD)	Pre-operative consideration, Chronic bronchitis, Emphysema, treat consideration...
21	1	1	Restrictive pulmonary diseases. Acute intrinsic pulmonary disorder	Pre-operative consideration. Anesthetic considerations a:- Preoperative Management. b:-Intra operative Management
22	1	1	Chronic Intrinsic pulmonary disorders	Pre-operative consideration. Anesthetic considerations a:- Preoperative Management. b:-Intra operative Management
23	1	1	Extrinsic restrictive pulmonary disorders, Embolism	Preoperative considerations. Pathophysiology, diagnosis, treatment preoperative,interaoperative,postoperative managements
24	1	1	Respiratory Failure	Respiratory failure, general and treatment, pulmonary edema,patho

25	1	1	Cardiogenic pulmonary edema&Noncardiogenic pulmonary edema(ARDS)	Cardiogenic pulmonary edema: General &treatment.Noncardiogenic pulmonary edema, pathophysiology & treatment.
26	1	1	Pathophysiology of Heart(RVHD)	The cardiac cycle:-Heart rate, stroke volume, preload, After load, Assessment of systolic function EF..
27	1	1	Specific valvular heart diseases Mitral stenosis	Preoperative consideration, pathophysiology, Calculating mitral valve area, treatment, Management.
28	1	1	Mitral Regurgitation	Preoperative consideration:- Pathophysiology, calculating mitral regurgitation fraction, treatment, Management.
29	1	1	Aortic Stenosis	Preoperative consideration, pathophysiology, Calculating mitral valve area, treatment, Management.
30	1	1	Aortic Regurgitation	Preoperative consideration:- Pathophysiology, calculating mitral regurgitation fraction, treatment, Management.
31	1	1	Tricuspid Regurgitation	Preoperative consideration:- Pathophysiology, calculating mitral regurgitation fraction, treatment, Management.
32	1	1	Infective Endocarditis	Premedication Cardiac conditions associated with endocarditis, prophylactic regimens, Anticoagulation management.

Third Year First Semester Islamic Studies

Goals: -The Islamic studies provides a basic and advanced information about Islam and his relationship with medicine in individual fields.

Learning objectives:

The students should be able to:-

- know the relation of medicine to Islam and its importance in Islam.

Teaching learning strategies:

- Lecture
- Class and small group discussion


- Role play
- Self- directed study

Evaluation:

- - Written final examination 80%
- - Mid -term: (Attendance, discipline, class activity and Preparation - including answering oral questions, quiz, etc. 20%

Source needed:

- Islamic handbook (prepared by related department)
- Computer, video projector, whiteboard and whiteboard.

ISLAMIC STUDIES		
Discipline	Religious	
Department	Islamic Studies	
Title	Islam & Medical Practice	
Pre-requisites	None	
Code	AT533	
Class	3	
Semester	Spring	
Credit 1	Theory	1
	Practical	
 Hours		

	Theory	Practical	Topics and Descriptions
1	1		Islam & Medical practice
2	1		General information about Medicines
3	1		Concept of Health and Medicines in Islamic Studies.
4	1		Definition of Health and Sickness
5	1		Importance of Medicines in Islam
6	1		Verses and Hadith related health
7	1		Medicines in Previous Religions.
8	1		Hygiene in Islam
9	1		Rules of Prohibited things in Islam's
10	1		Verses and Hadiths related protective procedures.
11	1		Individual and social hygiene
12	1		Harms and prohibition of narcotics and Alcoholic beverages
13	1		Verses and Hadith related to alcoholic beverage prohibition
14	1		Narcotic protection
15	1		Orders of scholar's related use of narcotics
16	1		Health benefits of fasting

Medical Ethics

Goals:-Medical ethics is a systemic effort to work within the ethos of medicine. Which has traditionally been services to a patient. there is now a shift from the traditional individual patient doctor relationships and medical care. With the advances in sciences and technology and the needs of patient, their families and the community..

Course description:

This course is designed to provide the learners with an overview of professional and ethical issues confronting the nursing profession within health care. It will also provide a forum for learners to reflect on these issues and discuss strategies for enhancement of nursing profession.

Learning Objectives

The students should be able to:

- Upgrade the knowledge of doctors and other medical personals
- Confidence making between medical personals and patients
- Introduce value of medicines and doctors and other medical personals
- Realize of medical ethics between medical personals
- Conflict preventions during medical cares
- Continue and standardize ethics in society

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self-study
- Presentations and reflection writing

Evaluation:

- Written final examination 60%
- Assignments, seminar, project or practical exercises 20%
(With practical assessment methods)
- Class activity, tests during the semester attitude in contributing 20%
To group work

Source needed:

- Computer, video projector, whiteboard and marker
- Medical ethics handbook.

Medical Ethics	
Discipline	Anesthesia
Department	Medical Ethics
Title	Essential Ethics for Medical Students
Pre-requisites	Behavioral Sciences
Code	AT534

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

Class			3	
Semester			Spring	
Credits			1	
			Theory	1
			Practical	0
Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1&2	2	0	An scope to medical ethics	History of medical ethics General principles of medical ethics Definition of medical ethics Goals of medical ethics Ethical and law relationships
3&4	2	0	Medicine	What is Medicine Responsibilities of medical clerks Proficiency need in medicine
4&5	2	0	Principle and sources of medical	Sources of medical ethics Does medical ethics changes by area and time
5,6&7	3	0	Key concepts	Independence Honesty Satisfaction Confidentiality Provision and losses
8,9&10	3	0	Islam and medical ethics	History of medicine in Islam Islamic rules in medical ethics Introduction of great Islamic doctors
11,12&13	3	0	Medical deontology part one	Definition of deontology Deontology in internal medicine Deontology in pediatric Deontology in gynecology
14,15&16	3	0	Medical Deontology part two	Deontology in forensic medicine Deontology in surgery Deontology in stomatology Deontology in Medical Technology Department Transplantation and Reanimation

Text Books:-

1. Gillon R. (1985) Philosophical Medical Ethics, Wiley, Chichester, p.2.
2. Leacock CD. (Ed.) (1927) Percival's Medical Ethics, Williams & Wilkins, Baltimore.
3. British Medical Association (2001) The Medical Profession and Human Rights: Handbook for a Changing Agenda, Zed Books, London, Chapter 9.
4. Kennedy I. (1981) The Unmasking of Medicine, George, Allen & Unwin, London.

Immuno-hematology

Goals:- Definition, methods, types, indications, Membrane blood group antigen and antibody, ABO, Rh and other blood groups, leukocyte and granulocyte antigens and antibodies Definition of Blood Banking, Organization of Blood Bank, Location of Blood Bank Map of Blood Bank (Reception, Donation room, Donor's rest room, Lab room, Blood storage room, Freezer room).

Course description:

The course covers compatibility theory, principle of antigens on red blood cells and antibodies in serum of blood. The course also includes blood typing and other basic. Immuno-hematology procedures competencies, differentiate the major blood groups clinical significance in immunology.

Learning Objectives

The students should be able to:-

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

- To know the general concepts of blood bank.
- To know the principle of blood transfusion.
- To understand different blood group.

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self- directed study

Evaluation:

- - Written final examination 60%
- - Skills lab examination 20%
- - Mid -term: (Attendance, discipline, class activity and Preparation - including answering oral questions, quiz, etc. 20%)

Source needed:

- Equipped Lab: microscope, hemoglobin meters, micro centrifuge, shakers, ECG recording device, centrifuge, etc.
- Practical immunology handbook (prepared by related department)
- Computer, video projector, whiteboard and whiteboard.

Immunoematology		
Discipline	Anesthesia	
Department	Physiology	
Title	Immunoematology	
Pre-requisites	None	
Code	AT535	
Class	3	
Semester	Spring	
Credit	Theory	1
	Practical	1
2		

Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1	1	1	Brief history of blood transfusion	Definition, methods, types, indications,
1	1	1	Red blood cells, platelets and leukocyte antigens and antibody	Membrane blood group antigen and antibody, ABO, Rh and other blood groups, leukocyte and granulocyte antigens and antibodies.
2	1	1	Introduction of Blood Banking	Definition of Blood Banking, Organization of Blood Bank, Location of Blood Bank, Map of Blood Bank (Reception, Donation room, Donor's rest room, Lab room, Blood storage room, Freezer room). Immunology Lab, Stock for Blood bags and other tools. Documentation of Blood Bank
2	1	1	Donor Selection	Donor selection and Blood collection for Blood Bank Blood collection for Blood Bank, preparation of Red cell concentrates
3	1	1	Serology of Blood Groups	Antigens, Antibodies, production of Antibody as an Immunological Action Naturally occurring Antibodies and Immune Antibodies, Red Cell Antigen-Antibody Reaction
3	1	1	Factors that effects on RBC Antigen-Antibody Reactions	RBC's Electrical charges, Temperature, pH, Freshness of Serum and RBC, Antigen-Antibody ration, Ionic Strength Agglutination of Antibody Coated Red Cells (Use of Albumin, use of Antihuman Globulin), Steps: Sensitization of RBCs RBCs Washing Adding of AHG Use of Photolytic Enzyme

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

				Complement
4	1	1	Blood Groups ABO System	ABO System, /genetics of ABO System Blood Grouping ABO System, use of “O” Group RBCs for Blood Serum grouping, Development of A&B Antigens of RBC
5	1	1	Sub groups	The Subgroups of Antigen –A, Anti AB and Anti A, Secretory Status/ Conditions IgG&IgM, Anti–A and Anti-B.
6	1	1	Rh System	Rh System, Clinical importance of Rh, Essential of Genetics for Rh System
7	1	1	Development of RhD	Development of RhD, Importance of RhD grouping, RhD, Test for D ^u , Partial D Applied Techniques in Blood Bank, reading of a reaction, Micro plate technique,
7	1	1	Indicators for Blood Grouping	RBCs for blood grouping, storage of RBCs Serum, testing of Antiserums and RBCs before use
9	1	1	Compatibility Tests	Direct Comb’s Test, Indirect Comb’s Test
10	1	1	Hemolytic disease of the newborn	Definition, etiology, clinic, treatment, prevention, complications, prognosis.
10	1	1	Types of blood bags and their anticoagulants	Kinds, composition of anticoagulants, classification of bags and volumes
11	1	1	Anti D Globulin Titer	Anti D Globulin titer, Anticoagulants
12	1	1	Formulas	Formula “A” of National Institute of Health (NIH), Formula “B” of NIH Citrate Phosphate Dextrose (CPD)-III, CPD with Adenine- IV, Advantages of CPD with Adenine, Heparin –V
13	1	1	Techniques for preservation of RBC’s	ATP preservation Course review and participant’s evaluation

14	1	1	Blood Components	Introduction of Blood Components, Packed Cells and Plasma Packed Cells and Plasma Fresh frozen plasma and related products
15	1	1	Checklists for Blood Banking	Checklist for signs of destruction of Blood or Plasma Checklist for Blood / Plasma Distribution.
16	1	1	Complications of blood transfusion	Infectious and noninfectious complications

Text Books

1. The Islamic charter of medical and health ethics.
2. Ethic in clinical practice, Judith C AhronHein.
3. Ethic and basic law for medical imaging, Battey Wilson.

Pharmacology

Goals:-The broad goals of teaching pharmacology to graduates are, to impart knowledge, skills and attitudes to the students so that they can describe drugs safely, effectively and maintain competency in professional life.to instill in them a rational and scientific basis of therapeutics.

Course description:

The primary goal of this course is to teach basic pharmacology that will allow the healthcare professional to provide patient care in the current integrated healthcare environment. The student will be introduced to basic pharmacology with an emphasis on how drugs act in humans in ways that relate to nursing and other healthcare professions.

This is accomplished in part through utilization of the nursing process: assessment, intervention and evaluation. The nursing student will learn to use knowledge of pharmacology along with other information in the nursing clinical reasoning process (assessment, diagnosis, planning/outcome criteria, implementation, evaluation of outcome).

Learning Objectives

At the end of this course students will be able to:-

- Understand pharmacokinetics and pharmacodynamics principle involved in the use of drugs.
- Understand and identify the various factors that can affect the action of drugs.
- Know the various routes of drug administration with advantages and disadvantages of these routes.
- Undertake dosage calculations as appropriate for the patient...
- Understand the importance of rational prescribing of drugs and the concepts of essential drugs & rational use of drugs.

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self- directed study

Evaluation:

- - Written final examination 80%
- - Mid -term: (Attendance, discipline, class activity and Preparation - including answering oral questions, quiz, etc. 20%

Source needed:

- Marker and whiteboard, computer, PowerPoint presentation, video projector.
- Pharmacology book.

Pharmacology	
Discipline	Anesthesia
Department	Pharmacology
Title	Pharmacology

Pre-requisites		Biology,Pathalogy,Biochemistry		
Code		AT536		
Class		3		
Semester		Spring		
Credit	3	Theory	2	
		Practical	1	
Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1	2	1	Introduction of Pharmacology	
2	2	1	Introduction of Pharmacology	
3	2	1	Introduction of Pharmacology (pharmacokinetic)	
4	1	1	Introduction of Pharmacology (Pharmacodynamics)	
4	1	1	Introduction of Pharmacology (Adverse Drug Reaction and drug interaction)	
5	1	1	Introduction of Autonomic System Pharmacology	
5	1	1	Autonomic system Pharmacology Cholinergic Drugs	
6	1	1	Autonomic system Pharmacology Cholinergic Drugs	
6	1	1	Autonomic system Pharmacology Anti Cholinergic Drugs(included Muscle Relaxant)	
7	1	1	Autonomic system Pharmacology Anti Cholinergic Drugs(included Muscle Relaxant)	
7	1	1	Autonomic System Pharmacology Adrenergic Drugs	
7	1	1	Autonomic System Pharmacology Adrenergic Drugs	
8	1	1	Autonomic System Pharmacology Anti Adrenergic Drugs	
8	1	1	Autonomic System Pharmacology Anti Adrenergic Drugs	
9	1	1	Introduction of CNS Pharmacology	
9	1	1	Pharmacology of Sedative-Hypnotics	

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

10	2	1	CNS Pharmacology - Narcotic Analgesics
10	1	1	Non-Steroidal Anti-Inflammatory Drugs(NSAIDs)
12	2	1	Anesthetics (General)
13	2	1	Anesthetics (General)
14	1	1	Anesthetics (General)
14	1	1	Anesthetics(Local)
15	1	1	Anesthetics(Local)
15	1	1	Histamine & Anti Histaminic Drugs
16	2	1	Respiratory System Pharmacology

Text Books

1. Basic &Clinical pharmacology, Bertram G.Katzung.
2. Pharmacology, Lippincott.
3. Drug Benefit and Risks, International text book of clinical pharmacology.CJVanBoxtel.

Pathology

Goals:-The broad goals of teaching graduates pathology are to impart the knowledge, skills and attitudes in the student to understand the etiopathology, morphology and pathological concepts related to various common disease.

Course description:

This is a laboratory-based course which provides students with the opportunities to build on the concepts and knowledge of altered physiological mechanisms and their impact on the functional status of the body. It also deals with the responses that participate in manifestation of disease. The usefulness of knowledge, skills and attitudes to the nurse in problem- solving in the hospital, school, community or home is the determining factor in the selection and integration of the content.

Learning Objectives:

The students should be able to:

- To know the principles of cell injury.
- Inflammation, immunodeficiency diseases.
- To know the general pathology of infectious disease.

- Know the mechanism of pathological changes in different systems.
- Know the mechanism of pathological changes in different systems.

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self-study

Evaluation:

- - Written final examination 60%
- - Skills lab examination 20%
- - Mid -term: (Attendance, discipline, class activity and Preparation - including answering oral questions, quiz, etc. 20%

Source needed:

- Equipped pathology Lab.
- Practical pathology handbook (prepared by related department)
- Computer, video projector, whiteboard and whiteboard

Pathology			
Discipline	Anesthesia		
Department	Pathology		
Title	Systemic Pathology2		
Pre-requisites	Pathology		
Code	AT537		
Class	3		
Semester	Spring		
Credit	3	Theory	2
		Practical	1

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1	2	1	Blood vessels, structure and function of blood vessels, blood pressure regulation, and hypertensive vascular disease Vasculitis and disorders of blood Vessel, hyperactivity	Vascular organization, Endothelial cells Vascular smooth muscle cells, Epidemiology of hypertension, Pathogenesis, Morphology Noninfectious vasculitis, Infectious vasculitis Raynaud phenomenon, Myocardial vessel vasospasm
2	2	1	Heart ,Overview of heart disease, Heart failure & Ischemic heart disease Hematopoietic and lymphoid systems, red cells disorders	Left-side heart failure, Right-side heart failure, Angina pectoris, Myocardial infarction, Chronic ischemic heart disease, and sudden cardiac death Anemia of blood loss, Hemolytic anemia
3	2	1	Red Cells Disorders White cell disorders	Anemia of diminished erythropoiesis Non-neoplastic disorders of white cells Neoplastic proliferations of white cells
4	2	1	Bleeding Disorder	Disseminated Intravascular Coagulation

			Lung	Thrombocytopenia, Coagulation disorders Atelectasis, acute respiratory distress syndrome, obstructive versus restrictive pulmonary diseases
5	2	1	Obstructive lung (airway) diseases, Chronic interstitial (restrictive, infiltrative) lung Diseases Pulmonary infections	Emphysema, Chronic bronchitis, Asthma, and Bronchiectasis, Fibro sing diseases, Granulomatous diseases Pulmonary Eosinophilia, Smoking-related interstitialDiseases. Community acquired acute pneumonias Community acquired atypical pneumonias Hospital acquired pneumonias, Aspiration pneumonia and lung abscess, Chronicpneumonia, Fungal infection.
6	2	1	Lesions of the upper respiratory Tract Oral cavity and gastrointestinal tract	Acute infections, Nasopharyngeal carcinoma Laryngeal tumors Oral inflammatory lesions, Proliferative and Neoplastic lesions, Diseases of Salivary glands
7	2	1	Esophagus Stomach	Obstructive and Vascular diseases Esophagitis, Esophageal tumors Inflammatory disease of the stomach, Neoplastic disease of the stomach
8	2	1	Small and large intestines	Intestinal obstruction, Vascular disorders of bowel

Text Books

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

			Appendix Liver, gallbladder, and biliary tract	Diarrheal disease, Inflammatory intestinal disease Colonic polyps and Neoplastic disease Acute appendicitis, Tumors of the appendix Clinical syndromes, Jaundice and Cholestasis Hepatic encephalopathy
9	2	1	Acute and chronic hepatitis Kidney and its collecting system glomerular disease	Viral hepatitis, Autoimmune hepatitis Drug/toxin-mediated injury mimicking hepatitis Clinical manifestations of renal diseases Mechanisms of glomerular injury and disease The nephritic and nephritic syndromes
10	2	1	Urinary outflow obstruction Tumors of the kidney Male genital system and lower urinary tract Penis, Scrotum, Testis, and Epididymis	Renal stones and Hydronephrosis Oncocytoma, Renal cell carcinoma, Clear cell carcinomas, Papillary renal cell carcinoma, Chromophobe renal cell carcinomas, and Wilms tumor Malformations, Inflammatory lesions, and neoplasms of the Penis, Cryptorchidism and testicular atrophy, Inflammatory lesions, Vascular disturbances, and Testicular neoplasms
11	2	1		Prostitis, Benign prostatic hyperplasia, and Carcinoma of the prostate Ureter pelvic junction obstruction and

			Prostate, Ureter, Bladder, and Urethra Sexually transmitted diseases	Retroperitoneal fibrosis, on-neoplastic and Neoplastic conditions of the urinary bladder Syphilis, Gonorrhea, Nongonococcal urethritis and cervicitis, Lymph granulomavenereum, Chancroid (soft chancre), Granuloma inguinal, Trichomoniasis, Genital herpes simplex, and Human papillomavirus Infection
12	2	1	Female genital system and breast, vulva & vagina Cervix, Body of uterus	Vulvitis, Non-neoplastic epithelial disorders, and Tumors of the Vulva, Vaginitis and Malignant neoplasms of the Vagina Cervicitis, Endometritis, Adenomyosis, Endometriosis, Abnormal uterine bleeding, and Proliferative lesions of the endometrium and myometrium
13	2	1	Diseases of pregnancy Breast & breast tumors	Ectopic pregnancy, Gestational trophoblastic disease Preeclampsia/Eclampsia Fibrocystic change, Inflammatory processes Fibro adenoma, Phyllodes tumor, Intraductal papilloma, and Carcinoma
14	2	1	Endocrine system Pituitary Thyroid Gland	Hypopituitarism and pituitary adenomas Hypopituitarism, Posterior pituitary syndromes Hyperthyroidism, Hypothyroidism, Thyroiditis, Graves' disease, Diffuse and Multinodular goiter, and Neoplasms of the thyroid

1. Robbins and Cotran pathologic Basis of Disease, Leonard Silly MD.

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

15	2	1	Endocrine pancreas	Diabetes mellitus, Pancreatic neuroendocrine tumors
			Adrenal cortex	Adrenocortical hyper function (Hyperadrenalism), Adrenal insufficiency, and Adrenocortical neoplasms
16	2	1	Adrenal medulla, Multiple endocrine neoplasia syndrome	Tumors of the adrenal medulla, Multiple endocrine neoplasia type 1, Multiple endocrine neoplasia type 2
			Skin, acute and chronic inflammatory dermatoid	Urticarial, Acute eczematous dermatitis, Psoriasis, and Infectious dermatoid

2. Netter Elastrator Human Pathology, Maximillian L. Buja MD

Internal Medicine

Goals:-The goals of this course are to provide training in the discipline of internal medicine, to provide exposure to pathophysiology, diagnostic methods, used in this field. It focuses on diagnostic decision making, case presentation skills, history and physical skills, Therapeutic decision making, communication skills, and professionalism.

Course description:

The most important targets of internal medicine, main disease, groups of patients, structure of internal ward, making the students familiar with patients difficulties and medical staff, getting skills in the medical history taking (discussions and talks to the patients).

Learning Objectives

At the end of this course student will be able to:-

- Demonstrate the ability to write daily progress notes on the ward and appropriate outpatient progress notes.
- Formulate a different diagnosis based on findings from the history and physical examination.
- Use the differential diagnosis to help guide diagnostic test ordering and its sequence
- Examination of cardiovascular system, ECG....

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self-study

Evaluation:

- - Written final examination 60%
- - Skills lab examination 20%
- - Mid -term: (Attendance, discipline, class activity and Preparation - including answering oral questions, quiz, etc. 20%

Source needed:

- Practical internal medicine handbook (prepared by related department)
- Computer, video projector, whiteboard and whiteboard

Internal Medicine		
Discipline	Anesthesia	
Department	Internal	
Title	Internal Medicine 2	
Pre-requisites	Basic Biomedical Sciences	
Code	AT538	
Class	3	
Semester	Spring	
Credit 3	Theory	2
	Practical	1

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1	2	1	Ischemic Heart Disease	Definition, Etiology and pathophysiology(brief) Effect of ischemia, Stable angina pectoris, Unstable angina pectoris, Asymptomatic ischemia, Clinical feature, Diagnosis and treatment
2	2	1	Myocardial Infarction	NSTEMI, STEMI, Definition, Etiology, Pathophysiology, Clinical Manifestation, Diagnosis, Name of Complications, Treatment
3	2	1	Congenital Heart Disease	Cyanotic congenital heart disease with left to right shunt ,ASD, VSD, PDA
4	2	1	Hypertension	Definition, Essential hypertension, Secondary hypertension ,Effects of Hypertension, Clinical feature and Diagnosis, Treatment , Drug classes with example
5	2	1	Rhythm and Conduction disturbances	Supraventricular arrhythmia, Sinus tachycardia, sinus bradycardia, atrial fibrillation
6	2	1	Rhythm and Conduction disturbances	PSVT, Ventricular arrhythmia, Ventricular premature beat, Ventricular tachycardia
7	2	1	Shock	Definition, Pathogenesis, Organ response, Specific forms of shock, Cardiogenic shock, Septic shock, Hypovolemic

8	2	1	Chronic Viral Hepatitis	Definition, Etiology, Ch. Hepatitis B and C, Clinical feature, Diagnosis and treatment
9	2	1	Liver Cirrhosis	Definition, Etiology, Complications , Clinical feature and Treatment
10	2	1	Glomerulopathy	The major glomerulopathies (just name of them), Nephritic syndrome, Definition,pathophysiology, Clinical feature, Diagnosis, DDX, Complication and treatment
11	2	1	Acute and Chronic Renal Failure	Definition, Clinical Manifestation, Diagnosis,DDx,Complications and treatment
12	2	1	Urinary Tract Infection	Acute pyelonephritis, Acute cystitis, acute prostatitis ,Definition, Clinical feature, Diagnosis, DDX, Complication and treatment
13	2	1	Hemodialysis and Transplantation	Definition, Modalities, Indications
14	2	1	Pre-Syncope, systole, Cardiac Arrest	Definition, Diagnosis and basic approach to management.
15	2	1	Acute Viral Hepatitis	Definition, Etiology, Clinical feature and treatment.
16	2	1	Acute and Chronic Cholecystites	Definition, Etiology, Clinical feature and treatment.

Text Books

- 1.Stoelting, Anesthesia and co-existing diseases.
2. Anesthesia for heart diseases James A, Dennard.
3. Anesthesia for congenital heartdiseases, Dean B Andropov

RADIOLOGY

Goals: -Aims of this course is to have enough knowledge and exposure to various radiological techniques and be able to interpret radiological findings with accuracy and confidence, different pathologies have characteristics radiological features which are strong basis for diagnostics of different disease...

Course description

The content is designed to prepare students for upcoming academic study and clinical experiences, topics include medical terminology, introduction to imaging, equipment, radiation protection, and patient management, positioning principles and roles of medical imaging professionals as parts of the health care team.

Learning Objectives

The students should be able to:

- Understand the fundamentals of radiology.
- Understand the biologic effects, contrast material, anatomy, and cardiac.-Abdominal imaging, and all other system imaging.

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self-study

Evaluation:

- - Written final examination 60%
- - Skills lab examination 20%
- - Mid -term: (Attendance, discipline, class activity and Preparation - including answering oral questions, quiz, etc. 20%

Source needed:

- Equipped radiology Lab.
- Practical radiology handbook (prepared by related department)
- Computer, video projector, whiteboard and whiteboard

Radiology				
Discipline		Anesthesia		
Department		Radiology		
Title		Radiology		
Pre-requisites		Medical Physic,Medicine,Surgery courses		
Code		AT539		
Class		3		
Semester		Spring		
Credit 2		Theory		1
		Practical		1
Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1	1	1	Principle of Radiology	Radiology,Fluoroscopy,Ultrasound,CTScan ,MRI,PET
2	1	1	Biologic effects of x-ray and radiation protection.	Deterministic Effects. Stochastic Effects, Principle of radiation protection, ALARA, Radiation Dosimeter.
3	1	1	Contrast material and its side effects.	Barium sulphate, Gastrographine, Non-ionic contrast media, side effects of contrast, contraindication.
4&5	2	2	Radiology anatomy of chest	Chest disorder, Pneumonia, Tuberculosis, Pleuraleffusion, Bronchial carcinoma.

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

6	1	1	Cardiac Imaging	Radiological anatomy, Imaging modalities, Cardiac anomalies.
7	1	1	Plan abdominal radiology	Pneuropreitoneum, Small bowel obstruction, Large bowel obstruction.
8	1	1	Gastrointestinal-Imaging	Radiological anatomy, Imaging modalities.
9	1	1	Hepatobiliary System.	Radiological anatomy, Imaging modalities. Hepatobiliary common disorder.
10	1	1	Urinary Tract Imaging	Radiological anatomy, Imagingmodalities, UT Common pathology.
11	1	1	Gynecological and obstetric Imaging	Radiological anatomy, Imagingmodalities, Common disorder.
12	1	1	Muscle- skeletal Imaging	Radiological anatomy, Imaging modalities, Skeletal trauma.
13	1	1	Neuroradiology(Anatomy)	CT,MRI
14	1	1	Neuroradiology(Emergencies)	Stroke,Truma
15	1	1	Pediatric radiology	Role of ultrasound, Chest x-ray, Acute abdomen.
16	1	1	Anesthesia for radiological procedures	Anesthesia for MRI Patients. Anesthesia for CT- Scan patients.

Text Books:

- 1- Radiology for anesthesia and intensive care (Richard Hopkins) 2edition.
- 2- Diagnostic Imaging (Peter Armstrong) 7edition.
- 3- Grainger and Allison's diagnostic radiology 6edition.

Reanimation

Goals:-The purpose of this subjects is to review and understanding the skills required for basic resuscitation for adults, children, and infants. Nutrition in perioperative care, management

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

- Computer, video projector, whiteboard and whiteboard

Reanimation				
Discipline		Anesthesia		
Department		Anesthesia		
Title		Reanimation		
Pre-requisites		Anatomy & Physiology		
Code		AT540		
Class		3		
Semester		Spring		
Credit 3		Theory		1
		Practical		2
Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1	1	2	Introduction to Reanimation	General information about Reanimation, initial assessment, In critical ill patient's clinical exams signs, management plan, drugs in resuscitation.
2	1	2	Intravenous fluid therapy	Total body water, goals, body fluid compartments, replacement of fluid, fluid maintenance requirements.
3	1	2	Intravenous solution	Normal saline ,glycoside, ringer lactate, sodium bicarbonate, amino acid solution, fat emulsion , manitol solution, magnesium sulphate.
4	1	2	Blood transfusion	Indication, type of blood transfusion, side effects of blood transfusion, complication of blood transfusion.
5	1	2	Electrolyte imbalance	Hypertonic and hypotonic condition, hypernatremia and hyponatremia, potassium distribution, magnesium balance

6	1	2	Nutrition in perioperative care	Basic nutritional needs, how to feed the patient, total parenteral nutrition.
7	1	2	Nutrition in perioperative care	Complications of nutritional support. Specific nutrients, enteral nutrition and nil per so rules prior to elective surgery.
8	1	2	Pain management	Physiology of pain, type of pain, practical points on post-operative pain, Methods of treating post .operative pain.
9	1	2	Management of postoperative pain in pediatric	Assessment of pain in neonate ,infants and toddlers, Pain Management strategies .
10	1	2	Thermoregulation and hypothermia	Hypothermia, intra operative considerations, postoperative considerations.
11	1	2	Malignant hyperthermia	Pathophysiology, clinical manifestations, intraoperative considerations.
12	1	2	Malignant hyperthermia	Postoperative considerations, confirmation of the diagnosis, prophylaxis, post anesthesia care, and discharge.
13	1	2	Anesthesia for patients with cardiovascular disease.	Key concepts anesthesia for patients with cardiovascular disease, cardiac risk factors, general considerations.

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

14	1	2	Management of hypertension	Preoperative considerations, preoperative management, premedication, intraoperative management, choice of anesthetic agents, management of hypertension.
15	1	2	Management of ischemic heart disease	Preoperative considerations, preoperative management, premedication, intraoperative Management, choice of anesthesia, postoperative management.
16	1	2	Management of valvular heart disease	General evaluation of patients, special studies, premedication, antibiotic prophylaxis, Anticoagulation management, anesthetic management.

References:

- 1- Oxford Handbook Of Anesthesia , Keith Allman, Iain Wilson
- 2- Clinical Anesthesiology , G. Edward Morgan, Maged S. Mikhail, Michael J.Murray
- 3- Understanding of anesthesiology, short text book of anesthesia
- 4- Miller, Basics of Anesthesia
- 5- Anesthesia for developing countries
- 6- Integrated management on emergency essential surgical care (WHO)

Basic Intensive Care

Goals: -The aim of this subject is understanding the main procedures in I.C.U related to anesthesia department, Basic information about the ICU, brief history of ICU, purpose of ICU, Design of the ICU, Equipment's needs in ICU, Staffing, discharge criteria from ICU and

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

- Computer, video projector, whiteboard and whiteboard.

Basic Intensive Care				
Discipline		Anesthesia		
Department		Anesthesia		
Title		Basic Intensive Care		
Pre-requisites		Reanimation		
Code		AT541		
Class		3		
Semester		Spring		
Credit 4		Theory		2
		Practical		2
Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1	2	2	Introduction of ICU	Basic information about the ICU , Historical Development of the ICU, the ICU team ,Characteristics of an I.C.U.
2	2	2	Organization of the ICU	Location of ICU, Physical environment of ICU, Decoration of ICU.
3	2	2	Common equipment's in ICU	Range of resuscitative equipment's:, equipment for the constant monitoring of bodily functions , wide array of drug s to treat the primary condition.

4	2	2	The Roles Of The I.CU Resident	Communication, Therapeutic functions, Assessment of patients, sensory deprivation, and sensory overload.
5	2	2	Postoperative Care	General Considerations, Central Nervous System, Cardio vascular system, Respiratory system, Diagnosis & Management of common problems.
6	2	2	Postoperative Care	Management of Agitation/confusion, Hypoventilation, Factors Affecting Airway, Maintaining airway.
7	2	2	Postoperative Care	Upper airway obstruction, Laryngeal Spasm, Laryngeal edema, Treatment, Peripheral factors, Postoperative nausea and vomiting.
8	2	2	Acid-base balance	Important for metabolic activity of the body, Concept of acids and bases, Regulation of acid-base balance, Laboratory tests.
9	2	2	Metabolic Disorder	Regulation of acid-base balance, bloodbuffering, respiratory regulation, ion exchange, renal regulation,
10	2	2	Metabolic Disorder	Classification of simple acid-base disorders, Primary causes, Alteration of metabolism and function, mixed acid-base disorders, Causes, Characteristics.
11	2	2	ABG analysis	Objectives, physiological compensation mechanism, Normal ABG Values, Steps to ABG Interpretation.
12	2	2	Comatose patients	Care of patients in Coma, differential diagnosis, investigation of Coma patient's medical intervention.
13	2	2	Infection control	Infection control in ICU, Prevention of Infection control in ICU, Predisposing factor of the patients, treatment.
14	2	2	Pressure sore	Prevalence, Pathophysiology, prevention from Pressure sore, care of patients suffering from Pressure sore.
15	2	2	Respiratory Failure	Pathophysiology ,diagnosis Hypoxemia and hypercapnia, Treatment.

16	2	2	oxygen therapy	Indication of oxygen therapy, side effect, routs of administration.
-----------	----------	----------	----------------	---------------------------------------------------------------------

References:

- 1- Handbook of Critical and Intensive Care Medicine
- 2- Lippincott Williams & Wilkins ICU Book
- 3- Oxford Handbook Of Anesthesia , Keith Allman, Iain Wilson
- 4- 4-Clinical Anesthesiology G. Edward Morgan, Maged S. Mikhail
- 5- Miller, Basics of Anesthesia.
- 6- Understanding of anesthesiology, Short Text Book of Anesthesia,
- 7- Anesthesia for Developing Countries.

Third Year Second Semester Islamic Studies

Goals: -The Islamic studies provides a basic and advanced information about Islam and his relationship with medicine in individual fields.

Learning objectives:

The students should be able to:-

- Know the history of Quran, Quran and science, women's right in Islam and paradise rewards.

Teaching learning strategies:

- Lecture
- Class and small group discussion.
- Self-study

Evaluation:

- - Written final examination 80%
- - Mid -term: (Attendance, discipline, class activity and Preparation - including answering oral questions, quiz, etc. 20%

Source needed:

- Islamic handbook (prepared by related department).
- Computer, video projector, whiteboard and whiteboard.

Islamic Studies			
Discipline		Anesthesia	
Department		Islamic Studies	
Title		UloomulQuran	
Pre-requisites		None	
Code		AT642	
Class		3	
Semester		Fall	
Credit 1		Theory	1
		Practical	
Weeks	Hours		Topics and Descriptions
	Thiorecal	Practical	
1	1		Uloom-ul-Quran: Basic Concept of Quran
2	1		Uloom-ul-Quran: History of Quran
3	1		Difference between Quran and Quds Hadith
4	1		Revelation: General Information
5	1		Quran is Allah's Word
6	1		Quran is Allah's Word
7	1		Quran and Science
8	1		Quran and Science
9	1		Quran and Science
10	1		Gradually Revelation of Quran
11	1		Disciplines or Manners for Recitation of the Quran
12	1		Women's Right in Islam
13	1		Allah's right and Human Rights in Islam
14	1		Concept of God in other religions
15	1		Islam and Comparative Religions
16	1		Paradise rewards and Hell's punishments

Behavioral Sciences

Goals: -The students will learn about health education and communication, when face to health related problems how to change their behavior according the problems and how to find healthy behavior that not face to those problems in future.

Course description:

An introduction to the biological basis of behavioral, Topics include the structure and functioning of the nervous system, brain behavior relationships and hormonal and genetic effects on behavior, Limited to psychology and behavioral science majors or consent of instructor.

Learning Objectives:

At the end of this course students will be able to:-

- Understand the concepts of behavioral sciences and health education/Promotion.
- Understand human behavior and its application in patient care.
- Use principle of ethic in common clinical situations and dilemma's.
- Understand the concepts of motivation, its impact in human behavior and illness related behavior.

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self-study

Evaluation:

- - Written final examination 80%

- Mid -term: (Attendance, discipline, class activity and Preparation - including answering oral questions, quiz, etc. 20%

Source needed:

- Behavioral Science handbook (prepared by related department).
- Computer, video projector, whiteboard and whiteboard

Behavioral Sciences				
Discipline		Anesthesia		
Department		Behavioral Science and Health Education		
Title		Behavioral Science		
Pre-requisites		None		
Code		AT643		
Class		3		
Semester		Fall		
Credit 1		Theory		1
		Practical		
Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1	1		Communication for health education	Process of communication, message, sender, receiver, channels of communication (interpersonal communication, mass media, traditional or folk media)
2	1		Type of communication	Didactic method, Socratic method, verbal and non-verbal communication, formal and informal communication, visual communication, telecommunication and internet, barriers of communication

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

3	1		Health communication	Functions of health communication : information , education , motivation , persuasion , counseling , raising morals , health development , organization
4	1		Health education	Definitions ,Alma Ata declaration , health education and behavior ,changing concepts , aims and objectives , role of health care provider , approach to health education : regulatory approach , service approach , health education approach , primary health care approach , health education versus propaganda
5	1		Models of health education	Medical model , motivation model , social intervention model
6	1		Contents of health education	Human biology , nutrition ,hygiene , family health , disease prevention and control , mental health , prevention of accidents , use of health services
7	1		Principles of health education	Credibility , interest , participation , motivation , comprehension , reinforcement , learning by doing , known to unknown , setting an example , good human relations , feedback , leaders
8	1		Practice of health education	Audiovisual aids: auditory aids , visual aids , combined A-V aids , methods in health education , individual approach , group approach : chalk and talk (lecture), flipcharts , flannel graph , exhibits , demonstrations
9	1		Group discussion	Definition , principles , limitations , panel discussion , symposium , workshop , role playing , conferences and seminars ,
10	1		Mass approach – Education of the general public	Mass media , television , radio , internet , newspapers , printed material, direct mailing , posters , billboards and sign , health museums and exhibitions , folk media , administration and organization
11	1		Information about infectious diseases and controls	Infectious diseases , incubation period ,quarantine , infective period , fomites , carrier , vector , epidemic , endemic , sporadic , epizootic general principles of control of Infectious diseases ; notification , isolation ,immunization , health education , disinfection

12	1		Communicable diseases and prevention	Malaria : patient care , prevention , Tuberculosis : prevention and health education , acute respiratory illness : home care , health education ,Leprosy : prevention and health education , viral hepatitis: prevention and health education
13	1		Communicable diseases and prevention	Amoebic dysentery : health message , prevention , Giardiasis: health education and prevention , cholera : health education , prevention , dehydration therapy in pediatrics and adult , how to make ORS at home , leishmania , trachoma : prevention and health education ,
14	1		Common problems of new born and health education regarding them	Cradle cap , diaper rash , common cold , simple swelling of the scalp , bleeding into the scalp ,fracture , fever , low birth weight , hypothermia vitamin A deficiency,
15	1		Common problems of new born and Mental health	Simple jaundice and abnormal jaundice : health education , prevention, Neonatal tetanus : prevention and health messages , Mental health and mental disorders ,health messages , drug abuse and health messages
16	1		Dental health , personal and family hygiene and health messages	Important of healthy teeth , personal and family hygiene , health messages for prevention of infections , health messages for initial nutrition of newborns and weaning , for pregnant women , for dehydration of kids , intestinal parasites , vaccination ,

Text Books:

1. Park's textbook of prevention and social medicine, 19th edition, Feb. 2014, Delhi India, k. PARK, M.B.B.S.,and M.S.
2. MOPH (ministry of public health Afghanistan)
3. UNICEF State of world's children 1989

Pharmacology

Goals:-The broad goals of teaching pharmacology to graduates are, to impart knowledge, skills and attitudes to the students so that they can describe drugs safely, effectively and maintain competency in professional life.to instill in them a rational and scientific basis of therapeutics.

Course description:

The primary goal of this course is to teach basic pharmacology that will allow the healthcare professional to provide patient care in the current integrated healthcare environment. The student will be introduced to basic pharmacology with an emphasis on how drugs act in humans in ways that relate to nursing and other healthcare professions.

This is accomplished in part through utilization of the nursing process: assessment, intervention and evaluation. The nursing student will learn to use knowledge of pharmacology along with other information in the nursing clinical reasoning process (assessment, diagnosis, planning/outcome criteria, implementation, evaluation of outcome).

Learning Objectives:

- Understand pharmacokinetics and pharmacodynamics principle involved in the use of drugs.
- Understand and identify the various factors that can affect the action of drugs.
- Know the various routes of drug administration with advantages and disadvantages of these routes.
- Undertake dosage calculations as appropriate for the patient...
- Understand the importance of rational prescribing of drugs and the concepts of essential drugs & rational use of drugs.
- Understand about all system pharmacology drugs.

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self- directed study

Evaluation:

- - Written final examination 60%
- - Skills lab examination 20%
- - Mid -term: (Attendance, discipline, class activity and Preparation – including answering oral questions, quiz, etc. 20%

Source needed:

- Marker and whiteboard, computer, PowerPoint presentation, video projector.
- Pharmacology handbook.

Pharmacology			
Discipline		Anesthesia	
Department		Pharmacology	
Title		Pharmacology	
Pre-requisites		Pharmacology1	
Code		AT644	
Class		3	
Semester		Fall	
Credit	2	Theory	1
		Practical	1
Weeks	Hours		Topicsand Descriptions
	Theory	Practical	
1	1	1	Gastro-Intestinal System Pharmacology
2	1	1	Diuretics
3	1	1	Cardiovascular System Pharmacology(Aniti Hypertensive)
4	1	1	Cardiovascular System Pharmacology(Drugs acting on heart)

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

5	1	1	Blood Pharmacology (Anticoagulants)
6	1	1	Plasma Volume Expanders
7	1	1	Hormones Pharmacology(Antidiabetics;insuline-Steroids)
8	1	1	Hormones Pharmacology(Antidiabetics;insuline-Steroid
9	1	1	Introduction of Anti - infective Drugs
10	1	1	Anti- infective Sulfamides / Anti-infective Beta-Lactam Antibiotics
11	1	1	Aminoglycosides & Macrolides , Cephalosporin's / other beta lactams
12	1	1	Chloramphenicol, Quinolones & Tetracycline's
13	1	1	other Anti-infective drugs used for Anaerobic infections
14	1	1	Anticonvulsants
15	1	1	Antidepressant's
16	1	1	Anti-septis&Disinfectants

Text Books:

1. Basic &Clinical pharmacology, Bertram G.Katzung.
2. Pharmacology, Lippincott.
3. Drug Benefit and Risks, International text book of clinical pharmacology.CJVanBoxtel.

Epidemiology

Goals:-Define and explain the common terms used in epidemiologic research.

Define and compare the major study designs used in epidemiologic research, their strengths and limitations.

Explain the epidemiological principles underlying screening, diagnostic testing, and decision analysis, and give practical interpretations of the results of these tools as they relate to individual patients. Discuss confounding and its effect on the interpretation of Study results.

Course description:

In this course, students will get familiar with the terminology of Epidemiology and Preventive Medicine, types and causes of epidemiological studies and understanding how diseases form and spread in the community, and will also acquire specific information about epidemiology of some diseases in children and adults which are common in the country and will learn principles and vaccination program.

Learning Objectives:

At the end of this course students will be able to:-

- Understand the basic concepts and application of epidemiology.
- Describe epidemiological measures of health and diseases.
- Differentiated between different of studies.
- Interpret the results of epidemiological studies

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self-study

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

Evaluation:

- Written final examination 60%
- Assignments, seminar, project or practical exercises
(With practical assessment methods) 20%
- Class activity, tests during the semester attitude in contributing
To group work 20%

Source needed:

- Computer, video projector, whiteboard and marker
- Various OPDs and IPWs.
- Epidemiology handbook.

EPIDEMIOLOGY			
Discipline		Anesthesia	
Department		Epidemiology and Biostatistics	
Title		Basic Epidemiology	
Pre-requisites		None	
Code		AT645	
Class		3	
Semester		Fall	
Credit 2		Theory	1
		Practical	1
⊗	Hours	Topics	Descriptions

	Theory	Practical		
1	1	1	Basic concepts and application of Epidemiology	Studying epidemiology; distribution and determinants of health status or event; the epidemiological approach: what, who, where, when, why; models of causation of diseases
2	1	1	Basic concepts and application of Epidemiology	Natural History of diseases; applications of epidemiology in public health: community health assessment and priority setting, evaluating health interventions and programs, preventing diseases and promoting health, improving diagnosis, treatment and prognosis of clinical diseases
3	1	1	Epidemiological measures of health and diseases: Frequency	Definition of a case; and measure of diseases frequency: prevalence, incidence, risk or cumulative incidence, odds and incidence rate
4	1	1	Epidemiological measures of health and diseases: Frequency	Uses of frequency measures and crude and specific rates: mortality rate
5	1	1	Epidemiological measures of health and diseases: association and impact	Measures of exposure effect and impact: relative measures, risk ratio, rate ratio, odds ratio, absolute measures, attributable (absolute) risk, population attributable (absolute) risk and population attributable fraction
6	1	1	Type of study: Descriptive study	Type of study: case presentation, case series, ecological, cross sectional, case-control, cohort study, and intervention study
7	1	1	Ecological studies	What is an ecological study? Why study groups? Multi-group and time-trend studies, analysis and interpretation
8	1	1	Cross-sectional studies	What is a cross-sectional study? Descriptive and analytical studies Study design, sampling, data collection Analysis, and strengths and weaknesses
9	1	1	Case-control studies	Study design, hypothesis, selection of cases, selection of controls, and measuring exposures, Analysis and interpretation, bias, confounding, and strengths and weaknesses

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

10	1	1	Cohort studies	What is a cohort? Types of cohort study? Study design: selection of the study population, exposures, follow-up and outcomes, Analysis Strengths and weaknesses
11	1	1	Intervention studies	Types of intervention study, study design, selection of population, allocation of treatment regimens, efficacy and effectiveness, other types of study design
12	1	1	Prevention strategies	Preventive medicine, approaches to prevention, primary prevention, secondary prevention, tertiary prevention, and high risk strategies versus population strategies, Epidemiological surveillance and routine data, public health surveillance, communicable diseases, health center and hospital data, controlling age and other confounders, value of routine data
13	1	1	Screening and diagnostic tests	Definition and purpose of screening, mass or targeted screening, reliability and validity of screening test, predictive value,
14	1	1	Screening and diagnostic tests	Ethics in screening and criteria for screening, Evaluating screening program: relative burden of diseases, feasibility, effectiveness, biases, cost and study design for evaluating screening
15	1	1	Sampling methods	None probability and probability sampling: simple random sampling, systematic sampling, stratified sampling and cluster sampling
16	1	1	Sample size calculation	Importance of sample size calculation, factors affecting sample size, sample size for surveys

Reference:

1. Farmer, R., & Miller, D. Lecture note on Epidemiology and Community Medicine. (Last ed.). Oxford: Blackwell.
2. Stanhope, M., & Lancaster, J. Community and Public Health Nursing, (Last ed.). St. Lois: Mosby.
3. Logan, B.B., & DawKins, C.E. (1996). Family Center Nursing in the Community. (Last ed.)

Endocrinology

Goals:-The goals of this course are to provide training in the discipline of internal medicine, to provide exposure to pathophysiology, diagnostic methods, used in this field. It focuses on diagnostic decision making, case presentation skills, history and physical skills, Therapeutic decision making, communication skills, and professionalism.

Course description:

The most important target of endocrinology, main diseases, groups of patients, structures of endocrinology ward, making the student familiar with patients and their difficulties, getting skills in the medical history taking (discussion and talks to the patients).

Learning Objectives:

At the end of this course student will be able to:-

- Diabetes, Steroid, Thyroids diseases.
- Disorder of Hemostasis, Thrombocytopenia.
- Anemia, Sickle cell diseases.

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Role play
- Self-study

Evaluation:

- - Written final examination 60%
- - Skills lab examination 20%
- - Mid-term: (Attendance, discipline, class activity and Preparation - including answering oral questions, quiz, etc. 20%

Source needed:

- Practical endocrine handbook (prepared by related department).
- Computer, video projector, whiteboard and whiteboard.

Endocrinology				
Discipline		Anesthesia		
Department		Endocrinology		
Title		Endocrinology		
Pre-requisites		Internal Medicine1-2		
Code		AT646		
Class		3		
Semester		Fall		
Credit 2		Theory		1
		Practical		1
Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1&2	1	1	Diabetes Mellitus	Preoperative Evaluation For Procedures that require a restricted caloric intake Using an institutional infusion protocol and transitioning to SC insulin No institutional insulin infusion protocol available Special considerations Insulin management with TPN and tube feeding Total parenteral nutrition Tube feeding

3	1	1	Stress-Dose Steroids	<p>Background</p> <p>Preoperative evaluation</p> <p>Perioperative management</p>
4&5	1	1	Thyroid Disease	<p>Background</p> <p>Preoperative evaluation</p> <p>Patients not know to have thyroid dysfunction</p> <p>Patients with known hypothyroidism</p> <p>Patients with known hyperthyroidism</p> <p>Perioperative management</p> <p>Hypothyroidism</p> <p>Thyroid function in the critically</p> <p>The hypothyroid patient undergoing cardiovascular surgery</p> <p>Myxedema coma</p> <p>Hyperthyroidism</p> <p>Non-thyroid surgery</p> <p>Thyroid surgery</p> <p>Thyroid storm</p>
6,7,8	1	1	Disorders of Hemostasis	<p>Preoperative evaluation</p> <p>Estimation of procedural bleeding risk</p> <p>History and physical</p> <p>Physical exam may</p> <p>Testing</p> <p>Perioperative management</p>

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

				<p>Thrombocytopenia</p> <p>Effect of platelet transfusions</p> <p>Immune thrombocytopenia</p> <p>Platelet dysfunction</p> <p>Von will brand disease</p> <p>Acquired disorders of coagulation</p> <p>Effect of fresh frozen plasma transfusions</p> <p>Inherited coagulation factor deficiencies</p>
9	1	1	Thrombocytopenia	<p>Background</p> <p>Perioperative management</p> <p>Assessment</p> <p>Monitoring/Prevention of complications</p>
10	1	1	Heparin-Induced Thrombocytopenia	<p>Perioperative management</p> <p>When to suspect HIT</p> <p>Typical time course of Thrombocytopenia in HIT</p> <p>Evaluation</p> <p>Treatment</p>
11&12	1	1	Anemia	<p>Preoperative evaluation</p> <p>History and physical</p> <p>Testing</p> <p>Perioperative management</p> <p>Treatment of preoperative anemia</p> <p>Treatment of intraoperative anemia</p> <p>Initial postoperative management</p>

				<p>Optimal transfusion threshold</p> <p>Effect of red blood cell transfusion</p> <p>Risks of transfusion</p> <p>Patients who decline blood transfusion</p> <p>Erythropoiesis-stimulating agents</p>
13	1	1	Sickle Cell Disease	<p>Preoperative evaluation</p> <p>Perioperative management</p> <p>Preoperative management</p> <p>Two days prior to surgery</p> <p>One day prior to surgery</p> <p>Intraoperative management (the purview of the anesthesia team)</p> <p>Postoperative care</p>
14	1	1	Rheumatoid Arthritis	<p>Preoperative evaluation</p> <p>General principles</p> <p>Cardiac evaluation</p> <p>Pulmonary complications</p> <p>Cervical spine disease</p> <p>History and physical exam</p> <p>Workup</p> <p>Perioperative management</p> <p>Medication management</p>
15	1	1	Systemic Lupus Erythematosus	<p>Preoperative evaluation Cardiac evaluation</p> <p>History</p>

				Physical exam and workup Perioperative management General principles Medication management
16	1	1	Gout and Pseudo gout	Preoperative evaluation Perioperative management Prevention of complications Management of complications Diagnosis Distinguishing gout from pseudo gout Treatment of acute postoperative gout or psedogout.

Text Books:

1. Molly Bleckley Jackson; somnath.Mockherjee.
2. Anson P Hamlin Editors.
3. The perioperative Medicine consultant handbook second edition 2015.

Pediatric Diseases Related to Anesthesia

Goals:-The broad goals of the teaching of graduate students in pediatric are to acquire knowledge and appropriate skills for optimally dealing with major health problems of children and to ensure their optimal growth and development.

Course description:

The most important targets of internal medicine, main disease, groups of patients, structure of internal ward ,making the students familiar with patients difficulties and medical staff, getting skills in the medical history taking(discussions and talks to the patients).

Learning Objectives

At the end of this course student will be able to:-

- know about Growth, Malnutrition,
- Know acute watery diarrhea

- Know approach to abdominal pain.
- Know Respiratory failure, Hemophilia, Anemia, CHF...

Teaching learning strategies:


- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self-study

Evaluation:

- - Written final examination 60%
- - Skills lab examination 20%
- - Mid -term: (Attendance, discipline, class activity and Preparation - including answering oral questions, quiz, etc. 20%

Source needed:

- Pediatric handbook (prepared by related department).
- Computer, video projector, whiteboard and whiteboard

Pediatric Diseases Related To Anesthesia			
Discipline		Anesthesia	
Department		Pediatric Internal	
Title		Pediatric Internal Department	
Pre-requisites		Basic Biomedical Science	
Code		AT647	
Class		3	
Semester		Fall	
Credit 2		Theory	1
		Practical	1
	Hours	Topics	Descriptions

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

	Theory	Practical		
1	1	1	Growth and development & behavioral	Fetal growth and development, Definition extra uterine life, Assessment of growth and development.
2	1	1	Malnutrition	Defination, Etiopathogenises, Clinical feature, Lab exam, Diagnosis, D/DX, and management
3	1	1	Acute watery diarrhea Dehydration	Defination, Etiopathogenises, Clinical feature, Lab exam, Diagnosis, D/DX, and management Prevention, complication, and prognosis.
4	1	1	Respiratory Failure	Definition, Causes, Pathology, Management.
5	1	1	Approach to Abdominal pain ,vomiting & Constipation	Definition, Causes, Pathology physiology, Clinical feature, Treatment
6	1	1	Bronchial Asthma and Croup	Definition, Causes, Pathology physiology, Clinical feature, Lab exam, Diagnosis, treatment, complication prevention and prognosis.
7	1	1	Pneumonia Oxygen therapy.	. Definition, Causes, Pathology physiology, Clinical feature, Lab exam, Diagnosis, treatment, complication prevention and prognosis
8	1	1	Seizures in children.	Definition, Causes, Pathology physiology, Clinical feature, Lab exam, Diagnosis, treatment, complication prevention and prognosis.
9	1	1	Coma&ICP	Definition, Causes, Pathology physiology, Clinical feature, Lab exam, Diagnosis, treatment, complication prevention and prognosis.
10	1	1	Anemia (IDA)	Definition, Causes, Pathology physiology, Clinical feature, Lab exam, Diagnosis, treatment, complication prevention and prognosis.
11	1	1	Hemophilia	Definition, Causes, Pathology physiology, Clinical feature, Lab exam, Diagnosis, treatment, complication prevention and prognosis.

12	1	1	Blood Transfusion	Definition, Causes, Pathology physiology, Clinical feature, Lab exam, Diagnosis, treatment, complication prevention and prognosis.
13	1	1	Approach to children with CHD	Definition, Causes, Pathology physiology, Clinical feature, Lab exam, Diagnosis, treatment, complication prevention and prognosis.
14	1	1	Congestive heart failure	Definition, Causes, Pathology physiology, Clinical feature, Lab exam, Diagnosis, treatment, complication prevention and prognosis.
15	1	1	Hypertension	Definition, Causes, Pathology physiology, Clinical feature, Lab exam, Diagnosis, treatment, complication prevention and prognosis.
16	1	1	Growth and development	Definition, Causes, Pathology physiology, Clinical feature, Lab exam, Diagnosis, treatment, complication prevention and prognosis.

Text Books:

1. Nelsons Textbook of pediatric, Klieman, Stanton's Gene.
2. For Fars & Arnelis Textbook of pediatrics, Neil Macintosh, Peter J Helms.

Nutrition

Goals:-This course introduces to the students the fundamental concepts of nutrition, key points for having and proper nutrition and standard dietary to have a healthy eating in the community.

Course description:

This course provides basic concepts and principles with emphasis at the Food and nutrition, Energy & Diet and Nutritional diseases.

Learning Objectives

By the completion of this course students will be able to:

- Understand and explain the fundamental concepts of basic nutrition(Energy,Macronutrients,Micronutrients)
- Understand and explain Food-Based dietary guidelines.

Teaching learning strategies:

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self-study

Evaluation:

- Written final examination 60%
- Assignments, seminar, project or practical exercises 20%
(With practical assessment methods)
- Class activity, tests during the semester attitude in contributing 20%
To group work

Source needed:

- Computer, video projector, whiteboard and marker.
- Nutrition handbook.

Nutrition				
Discipline		Anesthesia		
Department		Public health		
Title		Nutrition1		
Pre-requisites		None		
Course code		AT648		
Class		3		
Semester		Fall		
Credit	1	Theory	1	
		Practical		
Weeks	Hours		Topics	Descriptions
	Theory	Practical		

1	1		Energy	-Energy requirements, intake and expenditure. - Methods to assess energy expenditure.
2	1		Energy	-Factors influencing energy expenditure. - Deficiency and excess intakes.
3	1		Macronutrient's	-Classification of macronutrients(Carbohydrates and fibers=CHO, Proteins=Pro,Lipids) - Dietary sources of macronutrients.
4	1		Macronutrients	-Overview of digestion, absorption and metabolism (CHO, Pro, Lipid). -Functions (CHO, Pro, Lipid).
5	1		Macronutrients	-Dietary reference intakes. -Macronutrients in health and disease.
6	1		Micronutrients Vitamins	-Structure, functions of A,D,E and K
7	1		Micronutrients Vitamins	-Dietary sources and metabolism of A,D,E, and K.
8	1		Micronutrients Vitamins	-Assessment of status of vitamins A,D,E and K.
9	1		Micronutrients Vitamins	- Structure, functions of vitamins B1, B2, B3, B6, B9, B12, C and others.
10	1		Micronutrients Vitamins	- Dietary sources and metabolism of vitamins B1, B2, B3, B6, B9, B12, C and others.
11	1		Micronutrients Vitamins	Assessment of status of vitamins B1, B2, B3, B6, B9, B12, C and others.
12	1		Micronutrients Minerals	- Structure, functions, Dietary sources, metabolism and Assessment of status of vitamins Calcium, Iron, Zinc, Magnesium and Selenium.
13	1		Micronutrients Minerals	-Structure, functions, Dietary sources, metabolism and Assessment of status of vitamins Calcium, Iron, Zinc, Magnesium and Selenium.
14	1		Micronutrients Minerals	-Structure, functions, Dietary sources, metabolism and Assessment of status of

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

				Calcium, Iron, Zinc, Magnesium and Selenium.
15	1		Current food guide pyramid, Dietary guidelines.	-Food guide pyramids
16	1		Current food guide pyramid, Dietary guidelines.	-Main concept of DRI

Text Books:

1. Mahan LK, Raymond JN.Krause, s Food& the Nutrition Care Process, 14th Edition.Loise Missouri, Elsevier.2017.
2. Escott- Stump nutrition and Diagnosis-Related Care.8thEdition.Lippincott Williams &Wilkins.2016.

Nutrition

Goals: -In this course students learn about appropriate eating during life cycle. The goal of this course is to familiarize the students in allied health with the general nutritional principle as well as dietary guidelines for specific age groups.

Course description:

This course provides basic concepts and principles with emphasis at the Food and nutrition, Energy & Diet and Nutritional diseases.

Learning Objectives

At the end of this course students will be able to:

- Understand and explain the compare the current food guide pyramids with previous ones.

Understand and explain the nutritional requirements of different age groups during life cycle.**Teaching learning strategies:**

- Lecture
- Class and small group discussion

- Role play
- Self-study

Evaluation:

- Written final examination 60%
- Assignments, seminar, project or practical exercises (With practical assessment methods) 20%
- Class activity, tests during the semester attitude in contributing To group work 20%

Source needed:

- Computer, video projector, whiteboard and marker.
- Nutrition book.

Nutrition				
Discipline		Anesthesia		
Department		Public Health		
Title		Nutrition2		
Pre-requisites		None		
Code		AT648		
Class		3		
Semester		Fall		
Credit		1	Theory	1
			Practical	0
Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1	1		DRI(Dietary References Intake)	Guidelines for healthy eating

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

2	1		Nutrition for Reproductive Health Pregnancy	-Physiological changes during pregnancy. -Nutrition requirements in pregnancy.
3	1		Nutrition for Reproductive Health Pregnancy	- Pregnancy Weight Gain Recommendations.
4	1		Nutrition for Reproductive Health Pregnancy	-Complications and Nutritional Implications -Guidelines for eating during pregnancy.
5	1		Nutrition for Lactation	-Physiology of lactation. -Nutritional Requirement of lactation.
6	1		Nutrition for Lactation	-Galactogenasisi. -Concerns During Lactation.
7	1		Nutrition in Infancy	-Physiological development. -Nutritional Requirements. -Breastfeeding.
8	1		Nutrition in Infancy	-Complementary feeding. -Methods for improving growth and development in children.
9	1		Nutrition in Childhood	-Growth and Development -Nutrient Requirements
10	1		Nutrition in Childhood	-Nutritional Concerns -Preventing dental caries and chronic diseases.
11	1		Nutrition in Adolescence	-Growth and Development -Nutrient Requirements -Food Habits and Eating behaviors.
12	1		Nutrition in Adolescence	-Nutrition Screening, Assessment and Counseling. -The effect of peers on eating habits -Special Concerns.
13	1		Nutrition in Adulthood	-Lifestyle Health Risk Factors. -Interventions, Nutrition and Prevention.
14	1		Nutrition in Adulthood	-Nutritional Supplementation - Functional Foods.
15	1		Nutrition in Aging	-Physiology ic Changes

				-Nutritional requirements
16	1		Nutrition in Aging	-Key nutrient requirements -Common problems in elderly people

Text Books:

1. Mahan LK, Raymond JN.Krause, s Food& the Nutrition Care Process, 14thEdition.Loise Missouri, Elsevier.2017.

**Fourth Year
First Semester
Islamic Studies**

Goals: -The Islamic studies provides a basic and advanced information about Islam and his relationship with medicine in individual fields.

Learning objectives

At the end of course the students well be able to:-

- Explain basic information about Islamic studies
- To understanding of the students regarding Islamic civilization
- To perform prayers and other worships
- To enhance the skill of the students for understanding of issues related to faith and religious life.

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Self-study

Evaluation:

- - Written final examination 80%
- - Mid -term: (Attendance, discipline, class activity and Preparation - including answering oral questions, quiz, etc. 20%

Source needed:

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

- Islamic handbook (prepared by related department).
- Computer, video projector, whiteboard and whiteboard.

ISLAMIC STUDIES			
Discipline		Anesthesia	
Department		Islamic Studies	
Title		Basic Concepts of Islamic Knowledge	
Pre-requisites		None	
Code		AT749	
Class		4	
Semester		Spring	
Credit	1	Theory	1
		Practical	
Weeks	Hours		Topics and descriptions
	Theory	Practical	
1	1		Basic concept of Islamic Knowledge: General Information, Information about the Islamic Culture
2	1		Basic concept of Islamic Knowledge: Importance of Knowledge in Islam, Quran Verses and Hadith regarding Education.
3	1		Basic concept of Islamic Knowledge: Characteristics of Islamic Law, Quran Verses and Hadith regarding Inventions and changes in human life.
4	1		Memorization and translation of Surah 95 – 114
5	1		Daily Duaa (prayers) according to Hadith and Sunna
6	1		Daily Duaa (prayers) according to Hadith and Sunna
7	1		Daily Duaa (prayers) according to Hadith and Sunna
8	1		Basic concept of Islamic Knowledge: Characteristics of Islamic Law, Aim and Objective of Islamic Law
9	1		Basic concept of Islamic Knowledge: Aim and Objective of Islamic Law

10	1		Basic concept of Islamic Knowledge: Social main deviations
11	1		Definition, importance and ruling of Hijab in Islam : General information
12	1		Definition, importance and ruling of Hijab in Islam: Value and importance.
13	1		Definition, importance and ruling of Hijab in Islam :Concept of Virtue
14	1		Definition, importance and ruling of Hijab in Islam: Quantic Verses and Hadith regarding Hijab.
15	1		Definition, importance and ruling of the Hijab in Islam: Islamic Rules regarding Makeup and women outgoing.
16	1		Definition, importance and ruling of the Hijab in Islam: Conditions for Hijab.

Occupational Health

Goals:-The aims of this course isto understand the principles of occupational Health, to know main occupational hazards about key principle of occupational safety.

Course description

This course provides an opportunity to explore various occupational health topics not typically covered in traditional industrial hygiene class, professional standards and responsibilities, record keeping, objects of health screening and health surveillance...

Learning Objectives:

At the end of this course students will be able to:-

- Describe the physical environment inside the home, at the workplace and in the community, and its impact on health and disease.
- Describe the family environments.
- Suggest appropriate methods for improving the internal/external environment.
- Define safewater, describe the source of water...
- State the criteria (National and WHO) for safe water.
- Describe sources of waste and methods of waste control at individual and community levels.

Teaching learning strategies:

- Lecture

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

- Class and small group discussion.
- Role play
- Self-study

Evaluation:

- - Written final examination 80%
- - Mid -term: (Attendance, discipline, class activity and Preparation - including answering oral questions, quiz, etc. 20%

Source needed:

- Health management handbook (prepared by related department)
- Computer, video projector, whiteboard and whiteboard

Occupational Health				
Discipline		Anesthesia		
Department		Environmental and Occupational Health		
Title		Occupational Health		
Pre-requisites		None		
Code		AT750		
Class		4		
Semester		Spring		
Credit 1		Theory	1	
		Practical		
Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1	1	0	Introduction	Orientation and general information about occupational health

2	1	0	Generals of occupational health	History and terms of occupational health
3	1	0	General of Occupational health	Definitions, goals and objectives
4	1	0	Physical Hazard	Radiations, vibration, Noise, temperature ...
5	1	0	Biological hazards	Microorganisms (bacteria, fungi...) effects
6	1	0	Chemical hazards	Chemical agents and some related diseases
7	1	0	Psychological issues	Introduction and basic concepts
8	1	0	Ergonomic hazards	Introduction and basic concepts
9	1	0	Occupational health in health workers	Hazard factors in hospital environment
10	1	0	Occupational health in health workers	Standard precautions in health workers
11	1	0	Environmental health	General information, definitions and classification of Environmental health
12	1	0	Air pollution	definition, classifications, sources, effects of air pollution
13	1	0	Food	Food borne diseases and causes, care of foods
14	1	0	Water	Clear water, classification of water, waterborne diseases, water purification process
15	1	0	Liquid and solid waste	Definitions and classifications
16	1	0	Review of lectures	Review of lectures of the semester and discussion

Text Books:

- 1- Dade W. Moeller. Environmental Health, 3rd Edition England. 2005
- 2- Benjamin O. Allis.
- 3- Fundamental principle of occupational health and safety, 2nd edition, Geneva.

Biostatistics

Goals: -The basic goals of this subject is what is biostatistics? Type of statistics and its usage, parameter and statistics Organizing data, type of measurements, data quality, and exercise Frequency tables, class-interval frequency table, type of graph, bar graph, stacked graph, pie chart histogram and other type of graph.

Course description:

An introduction to basic statistical principles and their application to qualitative and quantitative research in health sciences. Rules governing use of descriptive and inferential statistics will also be explored.

Learning Objectives

-At the end of the course the students will be able to

- Define and interpret the common terms and measures used in population statistics and public health.
- Explain how factors such as random variation and error may affect summary measures and measures of association.
- Explain the general approaches that are used to formulate and test hypotheses and the factors that affect whether a study can validly test a given hypothesis.
- Define the common methods used in bio statistical analysis, and explain the circumstances in which those methods should be used.

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play

- Self-study

Evaluation:

- Written final examination 80%
- Class activity, tests during the semester attitude in contributing 20%

Source needed:

- Computer, video projector, whiteboard and marker.
- Practical Biostatistics handbook (prepared by related department).

BASIC BIOSTATISTICS				
Discipline		Anesthesia		
Department		Epidemiology and Biostatistics		
Title		Basic Biostatistics		
Pre-requisites		Epidemiology		
Code		AT755		
Class		4		
Semester		Spring		
Credit 2		Theory	1	
		Practical	1	
Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1	1	1	Introduction to Biostatistics	What is biostatistics? Type of statistics and its usage, parameter and statistics
2	1	1	Measurement	Organizing data, type of measurements, data quality, and exercise
3	1	1	Frequency Distribution and graphs	Frequency tables, class-interval frequency table, type of graph, bar graph, stacked graph, pie chart, histogram and other type of graph
4	1	1	Summary statistics: central location	Mean, mode, median and their comparison; range; quartiles, 5 points summary and interquartile range; and boxplot

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

5	1	1	Summary statistics: dispersion	Variance and standard deviation (SD), coefficient of variation, facts about SD, and selecting summary statistics
6	1	1	Standardization	Z score and T score, usage of standardized score
7	1	1	Normal probabilities distribution	Normal distribution: A Heuristic example, characteristics of normal distributions, the 68-95-99.7 rule, and Determining normal probabilities: standardizing values, the standard normal table, probabilities for ranges of normal random variables,
8	1	1	Normal probabilities distribution	Finding values that correspond to normal probabilities: terminology and notation, and assessing departures from normality
9	1	1	Sampling distribution	Distribution of sampling mean, standard error concepts, central limit theorem
10	1	1	Basic of confidence intervals	Introduction to estimation, confidence level for μ when δ is unknown, factors affecting confidence interval
11	1	1	Basics of Hypotheses testing	The null and alternative hypotheses, test statistics, p-value, significance level, type I and type II error
12	1	1	Comparing of independent proportion	Chi square test, contingency table, condition of usage and practice
13	1	1	One sample test and Comparing independent mean	One sample t test and conditions of usage, practice, Independent t test and conditions for usage, practice
14	1	1	Comparing dependent mean	paired t test and conditions of usage, practice
15	1	1	Comparing Several Means (One-Way Analysis for Variance)	Analysis of Variance (ANOVA), Post Hoc comparison, conditions of usage, practice
16	1	1	None parametric test	Mann Whitney U test, Wilcoxon test, kruskalwallis

Reference:

1. Gallings's, D.B., & Douglas, C.W. (1985). Bios tats: A Primer for Health Care Professionals. CAVCO: Chapel Hill.
2. A Brief version: Elementary Statistics, A step by step approach (2nded.). Allan G. Bluman, McGraw Hill, 2003

Anesthesia for Special Surgery

Goals:-The basic goal of this subject is understanding the advanced technique and procedure for anesthesia in different systems of the body.

Course description:

This course describes the course content administration and evaluation methods used in the special surgery with best anesthesia approach in the different felids.

Learning Objectives:

After completion of this course students will be able to:

- Describe anesthesia of thoracic surgery, ENT surgery, Cardiac surgery, anesthesia outside the OR, Post-operative problems, Major catastrophes, neuro surgery, Obstetric, Day care, Trauma and shock, Geriatrics.

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self-study

Evaluation:

- Written final examination. 60%
- Skill Lab examination. 20%
- Class activity, tests during the semester attitudein contributing 20%

To group work

Source needed:

- Computer, video projector, whiteboard and marker.

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

- Anesthesia for special surgery handbook (prepared by related department).

Anesthesia for Special Surgery				
Discipline		Anesthesia		
Department		Anesthesia		
Title		Anesthesia for Special Surgery		
Pre-requisites		Anatomy		
Code		AT751		
Class		4		
Semester		Spring		
Credit		Theory		
		Practical		
5		2		
		3		
Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1	2	3	Thoracic anesthesia.	Pulmonary function test, bedside, videography, preoperative preparation, premedication checklist, indication, intubation, double lumen tubes.
2	2	3	Thoracic anesthesia. ENT anesthesia.	Monitoring, pain management, Extubation, ICU management, Adenotonsillectomy, Mastoidectomy, Bronchoscopy, Esophagostomy.
3	2	3	Cardiac anesthesia.	NYHA Classification, Arrhythmias, Angina, Dyspnea, Spirometry - investigation, echocardiography, Angiography,

4	2	3	Cardiac anesthesia.	Getting ready for the case, induction of cardiac patient, precaution to be taken.
5	2	3	Cardiac anesthesia. Outside the OR anesthesia.	Cardiopulmonary bypass, Weaning of CPB, Transferring the patient to ICU, Care to be taken, ICU management. Starvation, Catha lab, Radiology.
6	2	3	Outside the OR anesthesia. With post- operative problems.	ECT, Short coming, Nausea, vomiting, sore throat, Laryngeal granuloma.
7	2	3	Post-operative problems.	Neurological complication, Awareness, Vascular complication, Trauma to theet, Headache.
8	2	3	Post-operative problems. Major catastrophes.	Ocular complication, Auditory complication, Mortality, causes of death, cerebral damage, prevention.
9	2	3	Nauru-anesthesia.	Glasgow coma scale, premedication.Spiacial investigation, CT, Angiography and MRI.
10	2	3	Nauru-anesthesia.	Check list, indication of the patient, Re enforced ETT, Positioning, ICP, Air embolism, Reversal of the patient, transferring to ICU OR Ward.
11	2	3	Obstetric anesthesia.	Deference between pregnant and non- pregnant lady, risk of anesthesia,premedication,check list, regional and general anesthesia,introduction,Maintanance and recovery.
12	2	3	Obstetric anesthesia.	Resuscitation of the newborn, APGAR Score, reversal and extubation.Eemergenc, Manual removal of placenta APH, PPH, Rupture of uterus, Ectopic pregnancy.
13	2	3	Day care anesthesia.	Special features, setup, advantage, disadvantage, complication, future.
14	2	3	Anesthesia for trauma and shock.	Resuscitation, preoperative investigation, assessment, circulatory management.

15	2	3	Anesthesia for trauma and shock. Geriatric anesthesia	Management of anesthesia, Rapid sequence, induction, Physiological changes, disease of aging, neurons system.
16	2	3	Geriatric anesthesia.	Geriatric pharmacodynamics, pharmacokinetic, post-operative nervous system dysfunction.

References:

- 1-Clinical anesthesia 5th edition,
- 2-Clinical anesthesiology 5th edition.
- 3-Short text book of anesthesia fifth edition.

NEUROSURGERY

Goals:-The aims of this course is perform a comprehensive neurologic examination. Diagnosis. Understand the fundamentals of neurosurgery.

Course description

Students will a resident and interact with faculty accordingly in the operating room, inpatient setting and clinic, students experiences will differ by...

Learning Objectives

The students should be able to:-

- Perform neurological examination (determine Glasgow Coma Scale).
- Perform a lumbar puncture for CSF analysis and placement of lumbar drain.
- Understand the inductions for various procedure including pyelography, ICP ...
- understand the all diseases of neurosurgery related to anesthesia.

Teaching learning strategies:

- Lecture
- Class and small group discussion.
- Role play
- Self-study

Evaluation:

- Written final examination. 60%

- Skill lab examination. 20%
- Class activity, tests during the semester attitude in contributing 20%

Source needed:

- Neurosurgery handbook (prepared by related department).
- Computer, video projector, whiteboard and marker.

NEUROSURGERY				
Discipline		Anesthesia		
Department		Neurosurgery		
Title		Principle of Neurosurgery		
Pre-requisites		Principle of Surgery		
Code		AT754		
Class		4		
Semester		Spring		
Credit 3		Theory	1	
		Practical	2	
Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1\$2	2	4	Introduction&histroy of neurosurgery, Neuroanatomical, Neuroinvestagation.	History of anesthesia in neurosurgery, Spinal cord.Medullahoblongata,Pons,Cerebell

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

				um,Cranialnerve,Brain,Cerebrovascular system, CSF,Radiology,CT- Scan,Angiography,Myelography,MRI, EEG,EMG,
3&4	2	4	Head injure(Anesthesia consideration's) Complications	Definition, Cause, Pathology, Introduction and calssifacation.Secondary complication of HI. During and post operation.
5	1	2	Traumatic Brain injure Management	Concussion, Contusion... Conservative and surgical treatments.
6	1	2	Spinal cord injure Curing for spinal injury and principle of treatment.	Introduction and classification of(SCI),History and examination of SCI
7	1	2	CNS Infections	Brian abscess introduction, TB of Spinal cord, clinic.
8	1	2	Peripheral Nerve injure, Intervertebral disc pathology	Introduction and classification and clinic treatment.
9	1	2	Neoplasm	Introduction and classification and clinic treatment. Introduction and classification and clinic treatment.
10	1	2	Pain and Surgical Treatments.	Introduction and treatments.
11	1	2	Poly Truman patient in ER	Treatments medical and surgical. ATLS

12	1	2	ICU	Management of coma and sever brain injure.
13	1	2	Patient positioning.	In OT and Anesthetic issues.
14	1	2	ICP	Anesthesia Considerations.
15	1	2	Anesthesia for awake operations & Stereotactic pro.	Awake operation & Stereotactic procedure.
16	1	2	Patient neurophysiological monitoring.	EEG, V-P, SHUNT.

Toxicology

Goals:-The main concepts of this subject is understanding Orientation, Introduction and brief history of toxicology Modern toxicology laboratory, Human resource, Extraction/Isolation and cleanup methods Screening/spot/color tests for different...

Course description:

This course will focus on the toxicology of mammalian body system with emphasis on dose response, mechanisms and the sites of action of major groups of chemical toxicants and biological toxins. The course is designed for students majoring in Bio-Medical sciences.

Learning Objectives:

- The students should be able to:-
- Know the fundamentals of toxicology.
- Perform different sample analysis techniques.
- Corrosive poisons-sulphuric acid, phenol, oxalic acid, nitric acid...
- Irritant non metabolic poisons-phosphorus, halogens...

Teaching learning strategies:

- Lecture
- Class and small group discussion

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

- Audio-visual aids
- Role play
- Self-study

Evaluation:

- Written final examination. 60%
- Skill Lab examination. 20%
- Class activity, tests during the semester attitude in contributing To group work 20%

Source needed:

- Computer, video projector, whiteboard and marker.
- Toxicology handbook (prepared by related department).

Toxicology				
Discipline		Anesthesia		
Department		Forensic Medicine and Toxicology		
Title		Toxicology		
Pre-requisites		None		
Code		AT753		
Class		4		
Semester		Spring		
Credit 3		Theory		1
		Practical		2
Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1	1	2	Introduction	Orientation, Introduction and brief history of toxicology
2	1	2	Fundamental of toxicology	Modern toxicology laboratory, Human resource,

4	1	2	Methods	Extraction/Isolation and cleanup methods
5	1	2	Methods of tests	Screening/spot/color tests for different persons/pesticide/ insecticides, volatile, cyanide, Tranquilizer's, Barbiturates', Alkaloids, metallic, acid and base, Toxic anion, plant poisons
6	1	2	Principles of chromatography	Thin layer chromatography and its application
7	1	2	Chromatography	Gas chromatography
8	1	2		HPLC (High performance liquid chromatography
9	1	2	Spectroscopy	Ultraviolet – visible spectroscopy and its application
10	1	2	Spectroscopy	Atomic absorption spectroscopy and its application
11	1	2	Polarography	Voltammetry/ Polarography trace meta-analysis and its application
12	1	2	Microwave	Microwave digestion system and its application
13	1	2	Alcohol analyzer	Breath alcohol analyzer and its application
14	1	2	Reporting	Toxicology reporting and interpretation
15	1	2	Poisoning death	Do and do not different personnel involved in crime investigation of poisoning death
16	1	2	Safety measures	Safety measures in the toxicology laboratory

Text Books:

- 1- Jaswal At, Mio Tobin. Handbook of analytical Toxicology published by Jaypee brother Medical books.
- 2-WHO, international program and chemical safety.
- 3-Basic analytical Toxicology, 1996- 2015.

Regional Anesthetic Technique

Goals:-The aims of this course is understanding the student's modern technique of local anesthesia with minimal side effects in different kind of surgical and non-surgical conditions.

Course description:

A good practical knowledge of the fundamental of anatomy is essential for the successful and safe practice of peripheral and central nerves block techniques in clued local infiltration of pain full areas, peripheral and central nerve blocks. Identify the ultrasound appearances of nerves and relational anatomical land marks for specific upper, lower, trunk and core blocks...

Learning Objectives

After completion of this course students will be able to:-

- Explain the anatomy of central nerve system and peripheral nerve
- System, and how to block the nerves individually in different surgical and non-surgical procedures,

Teaching learning strategies:

- Lecture
- Class and small group discussion
- Audio-visual aids
- Role play
- Self-study

Evaluation:

- Written final examination. 60%
- Skill Lab examination. 20%
- Class activity, tests during the semester attitudein contributing 20%

To group work

Source needed:

- Computer, video projector, whiteboard and marker.
- Nerve block handbook (prepared by related department).
- Equipment nerve stimulator, ultrasound...

Regional Anesthetic Technique				
Discipline		Anesthesia		
Department		Anesthesia		
Title		Regional Anesthetic Technique		
Pre-requisites		Anatomy & Physiology(Nerves)		
Code		AT750		
Class		4		
Semester		Fall		
Credit 3		Theory		1
		Practical		2
Weeks	Hours		Topics	Descriptions
	Theory	Practical		
1	1	2	Central Nerve block.	The role of neuroaxial anesthesia, the sick elderly patient. The obstetric patient, anatomy of vertebral column.
2	1	2	. Central Nerve block.	The spinal cord, mechanism of action, somatic blocked autonomic blocked,

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

				cardiovascular and pulmonary manifestation.
3	1	2	Central Nerve block.	Gastrointestinal, Urinary tract, endocrine manifestation, clinical considerations common to spinal and epidural blocks.
4	1	2	Central Nerve block.	Patient positioning, anatomic approach, spinal anesthesia, spinal needles, spinal catheters, specific techniques, factors influencing
5	1	2	Central Nerve block.	Narcoleptics, Sedative, Tranquilizers, Muscle relaxants.
6	1	2	Central Nerve block.	Spinal anesthesia agents, epidural anesthesia, needles, catheters, specific techniques.
7	1	2	Central Nerve block.	Activating an epidural factors affecting level of block, epidural anesthesia agents, local anesthetic PH adjustments, field epidural blocks.
8	1	2	. Central Nerve block.	Caudal anesthesia, Complication of neuroaxial blocks.
9	1	2	Central Nerve block.	Complication associated with need or catheter insertion, inadequate anesthesia or analgesia.
10	1	2	Peripheral Nerve block.	Neurotoxicity of local anesthesia.
11	1	2	Peripheral Nerve block.	Indication,Contraindication,regional anesthetic and clinical practice, choice of anesthesia, placement of block,premedication,field block, fixed anatomic relationship.
12	1	2	Peripheral Nerve block.	Infraclavicular, brachial plexus block, axillary brachial plexus block, anatomy, techniques, complication.
13	1	2	Peripheral Nerve block.	Med humeral brachial plexus block peripheral nerve block of the arm, Intravenous regional anesthesia of the arm, somatic blocked of the lower extremity, anatomy.
14	1	2	Peripheral Nerve block.	Lumber plexus (psoas) block, femoral nerve block, fascia iliac nerve block, lateral femoral continues block.

15	1	2	Peripheral Nerve block.	Popliteal block, saphenous nerve block, ankle block, somatic blocked of the trunk. .
16	1	2	Peripheral Nerve block.	Paravertebral nerve block, Inguinal nerve block, Summary.

References

- 1-Clinical anesthesia 5th edition,
- 2-Anesthesiology 5th edition, Short text book of anesthesia fifth edition,
- 3-Synopsis of anesthesia 8th edition.

Fourth Year Second Semester Practical Works

Goals: - At the end of this course the students will be able to:

- ✚ Do practical work with patient in hospital at Reanimation, Regional Anesthetic Techniques, and Anesthesia for Special Surgery, CSSD Procedure and Basic Intensive Care felids.

Weeks	Hours		Topics	Descriptions
		Practical		
1	4	4	Practical Work	Work on patient in hospital
2	4	4	Practical Work	Work on patient in hospital
3	4	4	Practical Work	Work on patient in hospital
4	4	4	Practical Work	Work on patient in hospital
5	4	4	Practical Work	Work on patient in hospital

**First Revision -2016 Kabul Medical University
Curriculum of Anesthesia Technology**

6	4	4	Practical Work	Work on patient in hospital
7	4	4	Practical Work	Work on patient in hospital
8	4	4	Practical Work	Work on patient in hospital
9	4	4	Practical Work	Work on patient in hospital
10	4	4	Practical Work	Work on patient in hospital
11	4	4	Practical Work	Work on patient in hospital
12	4	4	Practical Work	Work on patient in hospital
13	4	4	Practical Work	Work on patient in hospital
14	4	4	Practical Work	Work on patient in hospital
15	4	4	Practical Work	Work on patient in hospital
16	4	4	Practical Work	Work on patient in hospital
17	4	4	Practical Work	Work on patient in hospital
18	4	4	Practical Work	Work on patient in hospital
19	4	4	Practical Work	Work on patient in hospital
20	4	4	Practical Work	Work on patient in hospital
21	4	4	Practical Work	Work on patient in hospital
22	4	4	Practical Work	Work on patient in hospital
23	4	4	Practical Work	Work on patient in hospital

24	4	4	Practical Work	Work on patient in hospital

Kabul University of Medical Sciences
Education Development Center
Curriculum Committee

1-Associate Prof.Dr.M.FaridBarnayar

2-Associate Prof.Dr.Zainulabidin

3-Senior Teaching Assistant Dr.BrishnaDawlaty

4-Junior Teaching Assistant Dr.FahimaNegin

5-Junior Teaching Assistant Dr.M.SharifOryia

6-Junior Teaching Assistant Dr.MuhdawiJoya

References

1-Rajiv Gandhi University of India (**BACHELOR OF SCIENCE** in Anesthesia Technology) 2012.

2-Amrita University of India (**BACHELOR OF SCIENCE** in Anesthesia Technology) 2013.

3-Tehran University of Iran (**BACHELOR OF SCIENCE** in Anesthesia Technology) 1985.

4-Tabriz University of Iran (**BACHELOR OF SCIENCE** in Anesthesia Technology).