



TEHRAN UNIVERSITY
— OF —
MEDICAL SCIENCES

School of Allied Medical Sciences

Course Description Guide

Bachelor of Science in Anesthesiology

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Program Title and Definition:

Bachelor of Science in Anesthesiology is a program in Medical Sciences, in which students become familiar with new principles and different techniques of anesthesia, equipment, instruments, and related drugs. Students also learn how to provide patient care under general and local anesthesia before, during and after surgery.

Familiarity with care techniques and principles of acute pain control together with critical situations and medical emergency measures are also among students' training courses.

Graduates of this program operate under an anesthesiologist's direct supervision in educational and healthcare centers as assistants.

Course Titles and Credits:

The total number of credits is 130 and includes the following:

General Courses	22 Credits
Basic Courses, Special Courses, and Internship	92 Credits
Field Internship	16 Credits
Total	130 Credits

Table A. General Courses in Bachelor of Science in Anesthesiology

ROW	Title	No. of Credits	Course Hours			Prerequisite
			Theoretical	Practical	Total	
1	Two Courses from among Theoretical Foundations of Islamic Courses	4	68	-	68	-
2	One of the Islamic Ethics Courses	2	34	-	34	-
3	One of the Islamic Revolution Courses	2	34	-	34	-
4	One of the Courses on Islamic History and Civilization	2	34	-	34	-
5	One of the Courses on Introduction to Islamic Sources	2	34	-	34	-
6	Persian Literature	3	51	-	51	-
7	General English	3	51	-	51	-
8	Physical Education (1)	1	-	34	34	-
9	Physical Education (2)	1	-	34	34	8
10	Population and	2	34	-	34	-

	Family Planning				
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	Orientation	Course Code	Title	No. of Credits	Course Hours		
					Theoretical	Practical	Total
Islamic Education Courses	1) Theoretical Foundations of Islam	011	Islamic Thought (1) (Origin and Resurrection)	2	34	-	34
		012	Islamic Thought (2) (Prophethood and Imam)	2	34	-	34
		013	Human Beings in Islam	2	34	-	34
		014	Social and Political Rights in Islam	2	34	-	34
	2) Islamic Ethics	021	Philosophy of Ethics (Emphasis on Educative Issues)	2	34	-	34
		022	Islamic Ethics (Foundations and Concepts)	2	34	-	34
		023	Living Code of Ethics (Applied Ethics)	2	34	-	34
		024	Practical Mysticism of Islam	2	34	-	34
	3) Islamic Revolution	031	Islamic Revolution of Iran	2	34	-	34
		032	Introduction to the Constitution of the Islamic Republic of Iran	2	34	-	34
		033	Imam Khomeini's Political Thoughts	2	34	-	34
	4) History and Islamic Civilization	041	History of Islamic Culture and Civilization	2	34	-	34
		042	Analytic History of Early Islam	2	34	-	34
		043	History of Imam	2	34	-	34
	5) Introduction to Islamic Sources	051	Thematic Interpretation of the Quran	2	34	-	34
		052	Thematic Interpretation of Nahj al-Balagha	2	34	-	34

Table B. Basic Courses, Special Courses, and Internship in Bachelor of Science in Anesthesiology

Course Code	Title	No. of Credits	Course Hours			Prerequisite
			Theoretical	Practical	Total	
01	Anatomy (1)	2	26	17	43	-
02	Anatomy (2)	2	26	17	43	01
03	Physiology (1)	2	34	-	34	-
04	Physiology (2)	2	34	-	34	03
05	Physics in Anesthesiology	2	34	-	34	-
06	Microbiology and Sterilization	2	26	17	43	-
07	Biochemistry	1	17	-	17	-
08	Immunology	1	17	-	17	-
09	Psychology	2	34	-	34	-
10	Medical Terminology	2	34	-	34	-
11	Computer Application	3	34	34	68	-
12	Biostatistics and Research Methodology	3	43	17	60	-
13	Semiotics and Physical Examination	2	26	17	43	02 & 04
14	Principles of Pharmacology	3	51	-	51	03
15	First Aid Principles	2	26	17	43	02 & 04

16	Principles of Nursing and Working in Operating Room	2	26	17	43	-
17	Physiopathology	4	68	-	68	02,04,13 & 14
18	Hematology and Blood Transfusion	2	34	-	34	04
19	Medical Emergencies	2	26	17	43	15 & 17
20	Academic English	3	51	-	-	10 & Basic English
21	Management in Anesthesiology	1	17	-	-	-
22	Principles of Anesthesiology	3	51	-	-	01, 03, 05 & 16
23	Anesthetic Techniques (1)	4	68	-	-	22, Same Time 34
24	Anesthetic Techniques (2)	4	68	-	-	23, Same Time 35
25	Anesthetic Techniques (3)	4	68	-	-	24, Same Time 36
26	Post-Anesthesia Care	2	34	-	-	25
27	Principles of Intensive Care	3	51	-	-	17
28	Principles and methods of Pain Management	2	34	-	-	22
29	Introduction to Internal Diseases and Surgery	3	51	-	-	17
30	Specialized Pharmacology	3	51	-	-	14
31	Professional Ethics in Anesthesiology	1	17	-	-	-
32	Nursing Internship	2	-	-	102	06 & 16
33	Internship (1)	4	-	-	204	22
34	Internship (2)	4	-	-	204	33, Same Time 23
35	Internship (3)	4	-	-	204	34, Same Time 24
36	Internship (4)	4	?	?	204	35, Same Time 25
Total		92				

Table C. Internship in Bachelor of Science in Anesthesiology

Course Code	Title	Credit	Hours	
			Internship	Total
37	Field Internship (1)	8	408	408
38	Field Internship (2)	8	408	408
Total		16		

Title: Anatomy (1)

Prerequisite: None

No. of Credits: 2

Type of the Course: Theoretical and Practical

Main Objective: Knowing the structure of some human body systems in relation to anesthesia, including musculoskeletal, circulatory, and respiratory systems.

Course Description: In this course, students become familiar with the structure of human body, and by detailed knowledge of respiratory, circulatory, and musculoskeletal systems, they will be able to apply their knowledge at the patients' bedside.

Title: Anatomy (2)

Prerequisite: Anatomy (1)

No. of Credits: 2

Type of the Course: Theoretical and Practical

Main Objective: Becoming familiar with the structure of some human body organs such as eyes and ears, and nervous, gastrointestinal, and urogenital systems.

Course Description: In this course, students become familiar with the anatomical structure of some human body systems including visual, auditory, nervous, gastrointestinal, and urogenital systems and will be able to apply their knowledge of anesthetics at the patients' bedside.

Title: Physiology (1)

Prerequisite: None

No. of Credits: 2

Type of the Course: Theoretical

Main Objective: Learning the basics of cell physiology, and respiratory, cardiovascular, and circulatory systems.

Course Description: In this course, students become familiar with the physiology and performance of respiratory, cardiovascular, and circulatory systems and will be able to use their knowledge in practice at patients' bedside.

Title: Physiology (2)

Prerequisite: Physiology (1)

No. of Credits: 2

Type of the Course: Theoretical

Main Objectives: Becoming familiar with the physiology of urogenital and nervous systems and learning some generalities of the physiology of liver, endocrine glands, and digestion as well as the physiology of sleep.

Course Description: In this course, students learn about the performance of certain body systems and the way they are related to other body systems. They will be able to use this knowledge practically at patients' bedside. This course will also help students to better understand other special courses of the field.

Title: Physics in Anesthesiology

Prerequisite: None

No. of Credits: 2

Type of the Course: Theoretical

Main Objective: Becoming familiar with physics in relation to anesthesiology, and with the related instruments and equipment.

Course Description: In this course, students become familiar with the laws of physics and their application in measuring and adjusting anesthesiology equipment and instruments. They also learn about the necessary measures to prevent possible risks in the operating room.

Title: Microbiology and Sterilization

Prerequisite: None

No. of Credits: 2

Type of the Course: Theoretical and Practical

Main Objective: Learning the general issues of microbiology and the classification of pathogenic microorganisms with an emphasis on the methods of infection prevention as well as various methods of sterilization and disinfection.

Course Description: In this course, students become familiar with the classification of pathogenic microorganisms and common nosocomial infections, and learn the necessary measures to prevent and control such infections in the operating room and intensive care unit (ICU).

Title: Biochemistry

Prerequisite: None

No. of Credits: 1

Type of the Course: Theoretical

Main Objective: Learning about the structure of living cells and the chemical reactions of body systems.

Course Description: In this course, students become familiar with biomolecules (carbohydrates, lipids, amino acids, and proteins) and their metabolism in bodily tissues. They will also learn about some common blood and urine tests and will be able to use their knowledge at patients' bedside.

Title: Immunology

Prerequisite: None

No. of Credits: 1

Type of the Course: Theoretical

Main Objective: Learning the science of immunology and its relation to the provision of clinical services.

Course Description: In this course, students learn about immunity principles, cells and organs effective in immunity, defects and responses of the immune system, and vaccination. They will be able to use this knowledge practically at patients' bedside.

Title: Psychology

Prerequisite: None

No. of Credits: 2

Type of the Course: Theoretical

Main Objectives: Becoming familiar with and learning the fundamentals of psychology (individual and social), and acquiring skills in using them in their treatment of the patient, patient family and society.

Course Description: In this course, students become familiar with basic criteria and the skill in using psychological concepts. They gain the ability to recognize individual and social characteristics and their influence on behavior, learning, thinking, speech, etc. in their own field of practice. They also learn how to communicate with patients, their family members, and the society.

Title: Medical Terminology

Prerequisite: None

No. of Credits: 2

Type of the Course: Theoretical

Main Objective: Learning general medical terms and anesthesiology nomenclature to better understand the concepts of the field.

Course Description: In this course, through learning medical roots and affixes, common terms related to different body systems, and related abbreviations, students can better comprehend texts on anesthesiology and diseases of different body systems.

Title: Computer Application

Prerequisite: None

No. of Credits: 3

Type of the Course: Theoretical and Practical

Main Objectives: Becoming familiar with computers and using them in (relation to) the profession and educational and research activities.

Course Description: In this course, students become familiar with the application of computers. They will be able to enter the required information into medical software, and use the information in the field of anesthesiology and other educational and research activities when needed.

Title: Biostatistics and Research Methodology

Prerequisite: None

No. of Credits: 3

Type of the Course: Theoretical and Practical

Main Objective: Making students familiar with important statistical concepts and common research methods related to medical sciences and important healthcare indicators.

Course Description: In this course, students become familiar with concepts and principles related to different statistical and research methods. They will be able to assist research groups carrying out scientific studies in preparing questionnaires, sampling, observations, interviews, measurement activities and proper statistical analyses and procedures.

Title: Semiology and Physical Examination

Prerequisites: Anatomy (2) and Physiology (2)

No. of Credits: 2

Type of the Course: Theoretical and Practical

Main Objective: Becoming familiar with the principles of clinical examination and history taking, the way to do physical examinations, and the items required for examination.

Course Description: In this course, students learn about the clinical examination of different bodily organs, taking patients' history, and doing physical examinations. They will be able to assist a doctor providing tools and facilities needed for physical examination and checking the patients' health status. They will also be able to control patients' vital signs precisely and complete the required documents.

Title: Principles of Pharmacology

Prerequisite: Physiology (1)

No. of Credits: 3

Type of the Course: Theoretical

Main Objectives: Learning the general issues of pharmacology and becoming familiar with some of the different drugs affecting different body systems such as nervous, respiratory, and circulatory systems.

Course Description: In this course, students master the general principles of pharmacology, become familiar with medications affecting different body systems including autonomic nervous system, central nervous system, respiratory and circulatory systems, and main drugs' action mechanism, side effects, contraindications, clinical applications, dosage and drug laws.

Title: First Aid Principles

Prerequisites: Anatomy (2) and Physiology (2)

No. of Credits: 2

Type of the Course: Theoretical and Practical

Main Objective: Learning the principles and methods of providing medical emergency aid to victims before they are transferred to health facilities.

Course Description: In this course, students become familiar with the principles and measures of first aid during emergencies, and learn how to deal with emergency patients, help victims, and do basic life support. They also become familiar with the methods of carrying patients, bandaging, etc.

Title: Principles of Nursing and Working in the Operating Room

Prerequisite: None

No. of Credits: 2

Type of the Course: Theoretical and Practical

Main Objective: Becoming familiar with the basic concepts and principles of patient care before, during, and after surgery, and with the operating room and its rules and regulations.

Course Description: In this course, students learn the general concepts and principles of patient care. They also become familiar with the basics of working in the operating and recovery rooms, the way to admit, prepare, and transfer the patient to the operating room, and the general principles of patient care before, during and after surgery.

Title: Physiopathology

Prerequisites: Anatomy (2), Physiology (2), Semiology and Physical Examination, and Principles of Pharmacology

No. of Credits: 4

Type of the Course: Theoretical

Main Objective: Becoming familiar with the functions of different body systems in states of health and illness, and with the way to assess health conditions, treat illnesses, and take necessary measures.

Course Description: In this course, students learn the concepts of diagnosis and treatment; they become familiar with the clinical manifestations, common diagnostic methods, and treatment of certain diseases, especially in cardiovascular and respiratory systems, and gain the necessary knowledge.

Title: Hematology and Blood Transfusion

Prerequisite: Physiology (2)

No. of Credits: 2

Type of the Course: Theoretical

Main Objectives: Becoming familiar with blood and its derivatives, keeping blood and its products safe, and paying attention to patients during blood injection and its possible side effects.

Course Description: In this course, students learn about blood composition and its components. They will be able to define the importance of blood products and blood injection, explain how to store and preserve blood, and use it for patients according to physicians' orders. They will also be able to understand the possible complications following blood transfusion and report them.

Title: Medical Emergency

Prerequisites: First Aid Principles and Physiopathology

No. of Credits: 2

Type of the Course: Theoretical and Practical

Main Objectives: Learning the skills needed in initial encounters with patients in medical emergencies and crises, acquiring the capabilities needed for cardiopulmonary cerebral resuscitation (CPCR), and gaining the ability to use the related tools and equipment.

Course Description: In this course, students learn about the concept of communication in critical situations, patients' transfer and acceptance, and related rules and standards. They acquire the ability needed for helping emergency patients (suffering from cardiovascular and respiratory problems, traumatic injuries, accidents, etc.). Also in emergencies, they will be able to perform effectively in the CPCR team through proper use of the existing equipment and facilities and opening the patient's airway.

Title: Academic English

Prerequisites: Basic English and Terminology

No. of Credits: 3

Type of the Course: Theoretical

Main Objective: Enhancing students' ability in reading, comprehending, translating and writing academic medical texts, especially on anesthesiology.

Course Description: In this course, students use academic English texts and passages on anesthesiology to comprehend the technical concepts better. They are also encouraged to get involved in conversation and translation of materials.

Title: Management in Anesthesia

Prerequisite: None

No. of Credits: 1

Type of the Course: Theoretical

Main Objectives: Getting familiar with theories, management tasks, and behavioral sciences in management, and adapting them to health organizations, especially anesthesia wards.

Course Description: In this course, students learn about management methods and managerial tasks in behavioral sciences in the context of healthcare systems. They also learn about managing anesthesia wards and the scope of their activities, planning for patients and the staff, and having relationship with other therapeutic and administrative teams.

Title: Principles of Anesthesiology

Prerequisites: Anatomy (1), Physiology (1), Physics in Anesthesiology, and Principles of Nursing and Working in Operating Room

No. of Credits: 3

Type of the Course: Theoretical

Main Objective: Becoming familiar with the principles of general and local anesthesia, and the organizational structure, equipment, tools and instruments, facilities, and rules related to the field of anesthesiology.

Course Description: In this course, students become familiar with the principles of general and local anesthesia, and equipment, tools and instruments related to anesthesiology. They also learn about patients' admission to the operating room and their transfer to the recovery room, the way to manage patients' airways, the way to prepare patients, and monitoring principles of various body systems.

Title: Anesthesia Techniques (1)

Prerequisites: Principles of Anesthesiology and (Simultaneous with) Internship (2)

No. of Credits: 4

Type of the Course: Theoretical

Main Objective: Learning the principles and methods of general and local anesthesia, patient preparation, different body systems monitoring, complications of anesthesia, and patient care before, during and after general and local anesthesia.

Course Description: In this course, students learn about anesthesia methods, the way to prepare patients for general or local anesthesia, peripheral nerve blocks, methods of laying the patient on the operating room bed, the way to monitor various body systems, and patient care at various stages, that is, before, during and after general anesthesia, local anesthesia and blocks.

Title: Anesthesia Techniques (2)

Prerequisites: Anesthesia Techniques (1) and (Simultaneous with) Internship (3)

No. of Credits: 4

Type of the Course: Theoretical

Main Objectives: Learning about certain coexisting diseases, necessary preparations in the event of possible complications, anesthesia techniques in children, pregnant women and the elderly, and gaining the required skills and ability to take care of the patients in different stages of general and local anesthesia.

Course Description: In this course, students become familiar with main common coexisting diseases, anesthesia methods in children, pregnant women and the elderly, and the necessary instruments and equipment. They also learn about the measures and arrangements necessary for patient care in different stages of general anesthesia (i.e., before, during and after anesthesia) and local anesthesia, especially in the event of possible complications.

Title: Anesthesia Techniques (3)

Prerequisites: Anesthesia Techniques (2) and (Simultaneous with) Internship (4)

No. of Credits: 4

Type of the Course: Theoretical

Main Objectives: Becoming familiar with specific techniques of anesthesia in specialty and subspecialty surgeries and with other diagnostic-therapeutic measures, and attaining the necessary ability to take good care of patients.

Course Description: In this course, students become familiar with patient preparation and patient care methods for general or local anesthesia, with the use of different methods to make patients unconscious and bring them back to consciousness in specialty and subspecialty surgeries, and with other diagnostic-therapeutic measures. They also gain the ability needed for taking good care of patients.

Title: Post-Anesthesia Care

Prerequisite: Anesthesia Techniques (3)

No. of Credits: 2

Type of the Course: Theoretical

Main Objectives: Learning the general principles of working in post-anesthesia care unit and its management, taking care of patients hospitalized in post-anesthesia care unit, monitoring possible post-surgery complications and reporting them.

Course Description: In this course, students become familiar with the structure, instruments, equipment, and standards of post-anesthesia care unit, and the way to manage and work in that unit. They also learn how to take good care of inpatients that need special attention. Meanwhile, they will be able to understand the possible postoperative complications and act under an anesthesiologist's supervision to prevent them, provide a proper report, and help in their treatment.

Title: Principles of Intensive care

Prerequisite: Physiopathology

No. of Credits: 3

Type of the Course: Theoretical

Main Objective: Becoming familiar with the new methods of care, diagnosis and treatment of patients in critical conditions, the use of instruments and equipment, and the way to manage an intensive care unit (ICU).

Course Description: In this course, students become familiar with the organization, standards, rules, and management method of an ICU. They also learn about the use and maintenance of equipment and instruments, methods of diagnosis and treatment, rehabilitation and respiratory care, infection control, and the way to take care of critically ill patients suffering from the disorders of different body systems and needing special attention.

Title: Principles and Methods of Pain Management

Prerequisites: Anesthesia Techniques

No. of Credits: 2

Type of the Course: Theoretical

Main Objective: Becoming familiar with the principles and methods of acute and chronic pain control, pain control service, and necessary measures for patient care.

Course Description: In this course, students learn about the principles and methods of acute and chronic pain control in different age groups, and about equipment, instruments, facilities, and drugs used in pain management service. They also learn the necessary measures to prepare the patient and the required facilities. Meanwhile, they learn the principles of patient care at different stages of performing pain management methods under an anesthesiologist's supervision.

Title: Introduction to Internal Diseases and Surgery

Prerequisite: Physiopathology

No. of Credits: 3

Type of the Course: Theoretical

Main Objective: Learning about the principles of internal medicine and surgery, midwifery and pediatric diseases to better understand anesthesia techniques.

Course Description: In this course, students learn the general concepts related to health and disease, and become familiar with some common diseases of different body organs, their effect(s) on the functioning of other organs, diagnostic-therapeutic measures, and common operations on different body systems and their possible side effects. Meanwhile, students also learn about the necessary patient care measures before and after surgery.

Title: Specialized Pharmacology

Prerequisite: Basic Principles of Pharmacology

No. of Credits: 3

Type of the Course: Theoretical

Main Objective: Becoming familiar with the application of specific anesthesia drugs and their effects on different body systems.

Course Description: In this course, students learn about the performance and effect(s) of anesthesia drugs and other drugs used in the field, their side effects, drug interaction, and their effects on different body systems. They also learn preparation and preservation methods, and the necessary points on patient care at the time of drug prescription and afterwards.

Title: Professional Ethics in Anesthesiology

Prerequisite: None

No. of Credits: 1

Type of the Course: Theoretical

Main Objective: Becoming familiar with ethical principles, laws, regulations and standards in providing services related to anesthesiology.

Course Description: In this course, students learn about the background and general principles of medical ethics, patient rights, care standards, and disciplinary code relating to professional negligence. Then, they will be able to use their knowledge in performing professional duties.

Title: Nursing Internship

Prerequisites: Principles of Nursing and Working in Operating Room and Microbiology and Sterilization

No. of Credits: 2

Type of the Course: Clinical Training

Title: Internship (1)

Prerequisite: Principles of Anesthesiology

No. of Credits: 4

Type of the Course: Clinical Training

Title: Internship (2)

Prerequisites: Internship (1) and Principles of Anesthesiology (1)

No. of Credits: 4

Type of the Course: Clinical Training (204 hours)

Title: Internship (3)

Prerequisite: Internship (2) and Principles of Anesthesiology (2)

No. of Credits: 4

Type of the Course: Clinical Training (204 hours)

Title: Internship (4)

Prerequisite: Internship (3) and Principles of Anesthesiology (3)

No. of Credits: 4

Type of the Course: Clinical Training (204 hours)

Title: Field Internship (1)

No. of Credits: 8

Type of the Course: Training in the field

Title: Field Internship (2)

No. of Credits: 8

Type of the Course: Training in the field