

Course Description for Anatomy of skeleton

1. Course Name:	
Anatomy of skeleton	
2. Course Code:	
MTRA1101	
3. Semester / Year:	
Annual System	
4. Description Preparation Date:	
2025–2026	
5. Available Attendance Forms:	
Daily attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
75hrs./ units3	
7. Course administrator's name (mention all, if more than one name)	
Name: A.L. Mohammed Ali Hassan Jassim	
Email: mohmdg85@gmail.com	
8. Course Objectives	
Course Objectives	- The objective of teaching this course is to provide students with knowledge of the basics of anatomy in general, and human anatomy in particular. - It also aims to provide a comprehensive understanding of the structure and function of bones and joints. - By the end of the year, the student is typically prepared to understand the coursework in the following years and is trained and certified in human anatomy. - Provides a comprehensive understanding of the structure and function of bones and joints, which aids in medical, scientific, and practical applications.
9. Teaching and Learning Strategies	
Strategy	-Combining active learning, continuous review, practical tools, and technology are the most important factors that help you master anatomy effectively. -Use illustrations, division and simplification, use tables and diagrams, divide the body into parts, practice with 3D models or apps to explore anatomy, continuous review, presentations as well as focus on important details.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Study the introduction of skeleton anatomy and medical terms.	Introduction, Definition: - surface anatomy and anatomical position - vertical and horizontal lines and planes abdominal organs - cell and tissues - types	Lectures (Interactive) Online Lectures (Interactive) Role play Team-based learning presentation) Discussion Problem solving	Midterm exams Final exams evaluations
2	2	Study the shoulder bones and joints.	Skeleton of the upper limb: -shoulder girdle (clavicle and scapula bones)	Lectures (Interactive) Online Lectures (Interactive) Role play Team-based learning presentation) Discussion Problem solving	Midterm exams Final exams evaluations
3	2	Study the upper arm, elbow joint and forearm bones.	The humerus, -radius and ulna bones	Lectures (Interactive) Online Lectures (Interactive) Role play Team-based learning presentation) Discussion Problem solving	Midterm exams Final exams evaluations
4	2	Study the hand bones and joints.	The hand	Lectures (Interactive) Online Lectures (Interactive)	Midterm exams Final exams evaluations

				Role play Team-based learning presentation) Discussion Problem solving	
5	2	Study the important muscles of the upper limb.	The muscles of the upper limbs	Lectures (Interactive) Online Lectures (Interactive) Role play Team-based learning presentation) Discussion Problem solving	Midterm exams Final exams evaluations
6+7	2+2	Study the joints of the body (definition, type and mechanism) Study the thoracic bone anatomy.	Joints -type of joints -mechanism of movement Skeleton of the chest -ribs, sternum and segments of the spinal cord	Lectures (Interactive) Online Lectures (Interactive) Role play Team-based learning presentation) Discussion Problem solving	Midterm exams Final exams evaluations
8	2	Study the vertebral column segments anatomy.	Vertebrate -cervical, thoracic, lumbar, sacrum and coccyx -intervertebral disc	Lectures (Interactive) Online Lectures (Interactive) Role play Team-based learning presentation) Discussion Problem solving	Midterm exams Final exams evaluations

9+10	2+2	Study the lower limb bones and joints, pelvic girdle.	Skeleton of the lower limb -bony pelvis The femur, tibia and fibula bones	Lectures (Interactive) Online Lectures (Interactive) Role play Team-based learning presentation) Discussion Problem solving	Midterm exams Final exams evaluations
11	2	Study the foot bones and joints.	The foot	Lectures (Interactive) Online Lectures (Interactive) Role play Team-based learning presentation) Discussion Problem solving	Midterm exams Final exams evaluations
12+13 +14	2+2+2	Study the name and function of the lower limb muscles. Study the anatomy of skull and facial bones	The muscles of the lower limbs Skull -Bones of the skull -Facial bones -Mandible -TMJ	Lectures (Interactive) Online Lectures (Interactive) Role play Team-based learning presentation) Discussion Problem solving	Midterm exams Final exams evaluations
15	2	Study the skull cavities and sinuses.	Nasal cavity -Paranasal sinus	Lectures (Interactive) Online Lectures (Interactive) Role play Team-based learning	Midterm exams Final exams Evaluations

				presentation) Discussion Problem solving	
11. Course Evaluation					
The grade of 100 is distributed according to the student's mandated tasks such as daily preparation, daily, oral, monthly and final examinations: according to the following order 40 degrees midterm exam distributed to 20 degrees theoretical, 15 degrees practical and 5 degrees for participation, attendance and non-class activities 60 degrees final exam distributed to 25 degrees for operation and 35 degrees for theory					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)					
Main references (sources)			Grant's Atlas of Anatomy, 12th Edition Agur, Anne M.R.; Dalley, Arthur F.		
Recommended books and references (scientific journals, reports...)			Elsevier, Science direct, PubMed springer link.		
Electronic References, Websites			www.who.int		

Course Description for General Physiology

1. Course Name:					
General Physiology					
2. Course Code:					
MTRA1102					
3. Semester / Year:					
Annual System					
4. Description Preparation Date:					
2025–2026					
5. Available Attendance Forms:					
Daily attendance					
6. Number of Credit Hours (Total) / Number of Units (Total)					
75hrs./ units3					
7. Course administrator's name (mention all, if more than one name)					
Name: dr. Hakeem Ghani Hassan Email: alhamamy201567@gmail.com					
8. Course Objectives					
Course Objectives	1. Understand the main physiologic concepts of cells and their component. 2. Understand the factors of homeostasis regulation in human body 3. Understand the physiologic mechanisms of blood flow, gases exchange and gastric secretions				
9. Teaching and Learning Strategies					
Strategy	The study of General Physiology involves not just the acquisition of knowledge, but the development of skills to apply this knowledge in real–world contexts. By using active learning, hands–on experiences, clinical applications, and collaborative learning, students can build a comprehensive understanding of physiological concepts. These teaching and learning strategies, when combined effectively, create an engaging, dynamic learning environment that enhances student comprehension and prepares them for future healthcare practice or research.				
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject	Learning	Evaluation method

			name	method	
First	5	students should possess a solid understanding of how the body's systems function and interact, be able to apply physiological concepts to solve real-world problems, and demonstrate critical thinking, collaboration, and communication skills.	Introduction to Human Physiology – Cell components and organelles	theoretical	Short exams and discuss
Second	5	students should possess a solid understanding of how the body's systems function and interact, be able to apply physiological concepts to solve real-world problems, and demonstrate critical thinking, collaboration, and communication skills.	Blood: –Blood Functions blood components: blood plasma, plasma proteins function	theoretical	Short exams and discuss
Third	5	students should possess a solid understanding of how the body's systems function and interact, be able to apply physiological concepts to solve real-world problems, and demonstrate critical thinking, collaboration, and communication skills.	Formed elements: leukocytes (types and function), Platelets, and Erythrocytes, Erythropoietin Role in Erythrocytes Production.	theoretical	Short exams and discuss
Forth	5	students should possess a solid understanding of how the body's systems function and interact, be able to apply physiological concepts to solve real-world problems, and demonstrate critical thinking, collaboration, and communication skills.	Blood Clotting: clotting factors and Mechanism of Blood Clot Formation	theoretical	Short exams and discuss
Fifth	5	students should possess a solid understanding of how the body's systems function	Fluid Compartments in the Body:	theoretical	Short exams and discuss

		and interact, be able to apply physiological concepts to solve real-world problems, and demonstrate critical thinking, collaboration, and communication skills.	ICF,ECF, interstitial fluid and transcellular fluids, compositions of body fluids		
Sixth	5	students should possess a solid understanding of how the body's systems function and interact, be able to apply physiological concepts to solve real-world problems, and demonstrate critical thinking, collaboration, and communication skills.	Fluid shift: Diffusion, Osmosis, hydrostatic pressure, filtration & Active Transport Across Cell Membranes	theoretical	Short exams and discuss
Seventh	5	students should possess a solid understanding of how the body's systems function and interact, be able to apply physiological concepts to solve real-world problems, and demonstrate critical thinking, collaboration, and communication skills.	Homeostasis: Blood glucose homeostasis, excretion homeostasis and Body Temperature Regulation	theoretical	Short exams and discuss
Eighth	5	students should possess a solid understanding of how the body's systems function and interact, be able to apply physiological concepts to solve real-world problems, and demonstrate critical thinking, collaboration, and communication skills.	Heart and blood vessels: –Heart function –Blood vessels function –cardiac valves and their functions – Heart sounds.	theoretical	Short exams and discuss
Ninth	5	students should possess a solid understanding of how the body's systems function and interact, be able to apply physiological concepts to solve real-world problems, and demonstrate critical	Circulations: systemic circulation, pulmonary circulation, Cardiac cycle, cardiac output,	theoretical	Short exams and discuss

		thinking, collaboration, and communication skills.	and electrical properties		
Tenth	5	students should possess a solid understanding of how the body's systems function and interact, be able to apply physiological concepts to solve real-world problems, and demonstrate critical thinking, collaboration, and communication skills.	Blood Pressure: –Mean arterial blood pressure and its regulation –Role of kidney in regulation blood pressure	theoretical	Short exams and discuss
Eleventh	5	students should possess a solid understanding of how the body's systems function and interact, be able to apply physiological concepts to solve real-world problems, and demonstrate critical thinking, collaboration, and communication skills.	Measurement of lung function: –Lung volumes and capacities – Exchange & transport of gases in the blood	theoretical	Short exams and discuss
Twelfth	5	students should possess a solid understanding of how the body's systems function and interact, be able to apply physiological concepts to solve real-world problems, and demonstrate critical thinking, collaboration, and communication skills.	Gastrointestinal tract: –GI tract general functions –Oral cavity function, Salivary glands function, stomach function, small intestine and large intestine function	theoretical	Short exams and discuss
Thirteenth	5	students should possess a solid understanding of how the body's systems function and interact, be able to apply physiological concepts to solve real-world problems, and demonstrate critical thinking, collaboration, and	Gastrointestinal tract Secretions: General characteristic of GI Secretions and their functions	theoretical	Short exams and discuss

		communication skills.			
Fourteenth	5	students should possess a solid understanding of how the body's systems function and interact, be able to apply physiological concepts to solve real-world problems, and demonstrate critical thinking, collaboration, and communication skills.	Physiology of Pregnancy: Parturition, stages of labor hormonal stimulation of parturition and lactation	theoretical	Short exams and discuss
Fifteenth	5	students should possess a solid understanding of how the body's systems function and interact, be able to apply physiological concepts to solve real-world problems, and demonstrate critical thinking, collaboration, and communication skills.	Fetal development: – The newborn – First year after birth – Aging and death	theoretical	Short exams and discuss

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc

Mid-term exams: 25%

Practical exams: 15%

Final Semester exams: 60%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Seeleys anatomy and physiology (eleven edition) Cinnamon L. VanPutte , Jennifer L. Regan , and Andrew F. Russo (2017)
Main references (sources)	Essentials of Human Anatomy & Physiology, Global Edition Suzanne Keller Elaine Marieb (2017)
Recommended books and references (scientific journals, reports...)	Human Anatomy and Physiology, Global Edition [Sep 14, 2015] Erin, C. Amerman
Electronic References, Websites	Study Guide to Human Anatomy and Physiology 1 (2012) Michael Harrell M.S.

Course Description for Biology

1. Course Name:					
Biology					
2. Course Code:					
MTRA1104					
3. Semester / Year:					
Annual System					
4. Description Preparation Date:					
2025–2026					
5. Available Attendance Forms:					
Daily attendance					
6. Number of Credit Hours (Total) / Number of Units (Total)					
75hrs./ units3					
7. Course administrator's name (mention all, if more than one name)					
Name: Prof. Asmahan Munir Zinab Email: asmahanzinab @gmail.com					
8. Course Objectives					
Course Objectives		- Understanding the level of organization among living organisms - The ability to recognize the shape, components, and functions of the cell - Understanding the structure of DNA, its patterns, and its role - Identifying the modes of reproduction in living organisms			
9. Teaching and Learning Strategies					
Strategy		- Using discussions and interactive activities to enhance engagement and understanding (brainstorming) - Asking questions and guiding students to derive answers - Gaining practical knowledge through microscopic examination and hands-on experiments - Conducting weekly, monthly, and final quizzes - Preparing students for cooperative learning within groups and for writing experiment reports.			
10. Course Structure					
Week	Hours	Required Learning	Unit or subject name	Learning	Evaluation

		Outcomes		method	method
1st	2	Study and understand the history of biology with examples	Introduction to Biology	Theoretical (Computer-Based) & Laboratory Experiments	Weekly, Midterm, and Final Theoretical Tests
2nd	2	Study and understand the chemical composition of cells with examples	Introduction to Life Chemistry	Theoretical (Computer-Based)	Weekly, Midterm, and Final Theoretical Tests
3rd	2	Study and understand cellular organic compounds with examples	Biologically Important Molecules (Carbohydrates, Lipids, Proteins, Nucleic Acids)	Theoretical (Computer-Based)	Weekly, Midterm, and Final Theoretical Tests
4th	2	Study and understand cell divisions with examples	Cell Structure & Functions: Plasma Membrane, Passive and Active Transport, Plasma	Theoretical (Computer-Based)	Weekly, Midterm, and Final Theoretical Tests
5th	2	Study and understand cytoskeleton functions with examples	Cell Structure & Functions: Cytoskeleton (Microfilaments, Intermediate Filaments, Microtubules), Cilia, and Flagella	Theoretical (Computer-Based)	Weekly, Midterm, and Final Theoretical Tests
6th	2	Study and understand cellular organelles with examples	Eukaryotic Cell Organelles: Morphology and Structure of Mitochondria, Types and Functions of Lysosomes	Theoretical (Computer-Based)	Weekly, Midterm, and Final Theoretical Tests
7th	2	Study and understand Golgi apparatus functions with examples	Eukaryotic Cell Organelles: Morphology and Function of Golgi Apparatus	Theoretical (Computer-Based)	Weekly, Midterm, and Final Theoretical Tests
8th	2	Study and understand the endoplasmic reticulum with examples	Eukaryotic Cell Organelles: Endoplasmic Reticulum (Rough & Smooth) and Their Functions, Vacuoles, Vesicles, Ribosomes	Theoretical (Computer-Based)	Weekly, Midterm, and Final Theoretical Tests
9th	2	Study and understand nuclear structure and functions with examples	Eukaryotic Cell Organelles: Nucleus and Its Components	Theoretical (Computer-Based)	Weekly, Midterm, and Final Theoretical Tests
10th	2	Study and understand chromosomes with	Eukaryotic Cell Organelles:	Theoretical (Computer-	Weekly, Midterm,

		examples	Chromosome Structure (Replication, Transmission)	Based)	and Final Theoretical Tests
11th	2	Study and understand DNA structure with examples	DNA Replication, Transcription, and Protein Synthesis: DNA Structure	Theoretical (Computer- Based)	Weekly, Midterm, and Final Theoretical Tests
12th	2	Study and understand DNA transcription and translation with examples	DNA Replication, Transcription, and Protein Synthesis: Transcription	Theoretical (Computer- Based)	Weekly, Midterm, and Final Theoretical Tests
13th	2	Study and understand protein synthesis with examples	DNA Replication, Transcription, and Protein Synthesis: DNA Translation	Theoretical (Computer- Based)	Weekly, Midterm, and Final Theoretical Tests
14th	2	Study and understand cell life cycle and mitosis	Introduction to Cell Reproduction: Cell Cycle and Mitosis	Theoretical (Computer- Based)	Weekly, Midterm, and Final Theoretical Tests
15th	2	Study and understand meiosis	Introduction to Cell Reproduction: Meiosis, Prokaryotic Cell Division	Theoretical (Computer- Based)	Weekly, Midterm, and Final Theoretical Tests

11. Course Evaluation

Midterm Exam: **40 Marks** + Final Exam: **60 Marks** / **Total: 100 Marks**

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	- Lehninger Principles of Biochemistry – David L. Nelson & Michael M. Cox - Biochemistry – Jeremy M. Berg, John L. Tymoczko, Gregory J. Gatto Jr.
Main references (sources)	VJ. Bekish, Yu.T. Nikulin (2006) Practical Book on Medical Biology.
Recommended books and references (scientific journals, reports...)	1. Elizabeth o Grady, Jason Cashmore, Marsha, Carol Wismer(2018). Principles of Biology- An introduction to Biological Concepts . second Edition. 2. Peter Raven (2016) Biology. Elven Edition.
Electronic References, Websites	https://www.khanacademy.org/science/biology/cellular-molecular-biology https://www.biomanbio.com/

Course Description for General chemistry

1. Course Name:					
General chemistry					
2. Course Code:					
MTRA1105					
3. Semester / Year:					
Annual System					
4. Description Preparation Date:					
2025–2026					
5. Available Attendance Forms:					
Daily attendance					
6. Number of Credit Hours (Total) / Number of Units (Total)					
75hrs./ units3					
7. Course administrator's name (mention all, if more than one name)					
Name: dr. ahmed jaber ibrahim			Email: ahmed.jibrahim@alayen.edu.iq.		
8. Course Objectives					
Course Objectives		Specific objectives: - At the end of the year, the student will be able to: 1. Introduce the student to chemistry 2. How to deal with chemicals 3. Detect and separate materials and prepare standard materials 4. Develop skills in solving algorithmic (mathematical) problems 5. Analyze and build concepts 6. Write reports and objective data 7. Use laboratory equipment/safety			
9. Teaching and Learning Strategies					
Strategy		Blended Learning Lectures (Interactive) Online Lectures (Interactive) Use of strategy, collaborative learning, discussion, brainstorming a practical discussion Problem solving			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1	5	A1/A2/A4 B1/B2/B3/B4 C1/C2/C3/C4	The atom molecular structure electronically distribution Chemical bonding	Lectures (Interactive) Online Lectures (Interactive) Use of strategy, collaborative learning, discussion, brainstorming and practical discussion	Monthly and report exams Scientific discussions
2	5	A1/A2/A4 B1/B2/B3/B4 C1/C2/C3/C4	Liquid mixture, Buffer solutions-types	Lectures	Monthly and report exams Scientific discussions
3	5	A1/A2/A4 B1/B2/B3/B4 C1/C2/C3/C4	Quantitative & qualitative analysis methods.	(Interactive)	Monthly and report exams Scientific discussions
4	5	A1/A2/A4 B1/B2/B3/B4 C1/C2/C3/C4	Molar & normal concentrations & method. Problems & discussion.	Online Lectures (Interactive)	Monthly and report exams Scientific discussions
5	5	A1/A2/A4 B1/B2/B3/B4 C1/C2/C3/C4	Acids, base -examples.	Use of strategy, collaborative learning, discussion, brainstorming and practical discussion	Monthly and report exams Scientific discussions
6	5	A1/A2/A4 B1/B2/B3/B4 C1/C2/C3/C4	Oxidation & reduction.	Lectures	Monthly and report exams Scientific discussions
7	5	A1/A2/A4 B1/B2/B3/B4 C1/C2/C3/C4	Principles of organic chemistry Hydrocarbons Alkenes preparation properties reactions.	(Interactive)	Monthly and report exams Scientific discussions
8	5	A1/A2/A4 B1/B2/B3/B4 C1/C2/C3/C4	Alcohols - Ketones - Aldehydes - Carboxylic acids classification & properties	Online Lectures (Interactive)	Monthly and report exams Scientific discussions
9	5	A1/A2/A4 B1/B2/B3/B4 C1/C2/C3/C4	Aromatic hydrocarbons Carbohydrates - classification & reactions	Use of strategy, collaborative learning, discussion, brainstorming and practical	Monthly and report exams Scientific discussions

				discussion	
10	5	A1/A2/A4 B1/B2/B3/B4 C1/C2/C3/C4	Amines aryl amines	Lectures	Monthly and report exams Scientific discussions
11	5	A1/A2/A4 B1/B2/B3/B4 C1/C2/C3/C4	Introduction to biochemistry, and the machinery of life	(Interactive)	Monthly and report exams Scientific discussions
12	5	A1/A2/A4 B1/B2/B3/B4 C1/C2/C3/C4	Biochemistry and nutrition	Online Lectures (Interactive)	Monthly and report exams Scientific discussions
13	5	A1/A2/A4 B1/B2/B3/B4 C1/C2/C3/C4	Sugars, starches and fibers	Use of strategy, collaborative learning, discussion, brainstorming and practical discussion	Monthly and report exams Scientific discussions
14	5	A1/A2/A4 B1/B2/B3/B4 C1/C2/C3/C4	Isomers, classifications	Lectures	Monthly and report exams Scientific discussions
15	5	A1/A2/A4 B1/B2/B3/B4 C1/C2/C3/C4	Electrolytes, electrochemistry	(Interactive)	Monthly and report exams Scientific discussions

11. Course Evaluation

Midterm Exam: **40 Marks** + Final Exam: **60 Marks** / **Total: 100 Marks**

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Non
Main references (sources)	1. Solutions for General Chemistry: Principles and Modern Applications 11th Ralph H. Petrucci, F. Geoffrey Herring, Jeffry D. Madura, Carey Bissonnette 2. Solutions for CHEMISTRY: The Molecular Nature of Matter and Change 7th Martin S. Silberberg, Patricia G. Amateis
Recommended books and references (scientific journals, reports...)	Handbook of General Chemistry, 3 rd edition.
Electronic References, Websites	University educational platform

Course Description for General Physics

1. Course Name:	
General Physics	
2. Course Code:	
MTRA1102	
3. Semester / Year:	
Annual System	
4. Description Preparation Date:	
2025–2026	
5. Available Attendance Forms:	
Daily attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
75hrs./ units3	
7. Course administrator's name (mention all, if more than one name)	
Name: Email: raed.k@sc.uobaghdad.edu.iq	
8. Course Objectives	
Course Objectives	- The student should recognize the standard units used in physical measurements. - The student should be able to define the concepts of electricity and magnetism and understand the relationship between them. - The student should distinguish between the concepts of gravity and kinetic energy and understand their importance in physical phenomena. - The student should explain the relationship between work and energy in different physical systems. - The student should differentiate between conservative and non-conservative forces and analyze their effects on motion. - The student should understand the concepts of momentum, impulse, and types of collisions and apply them to physics problems.
9. Teaching and Learning Strategies	
Strategy	- Conduct a discussion with students to explore fundamental concepts such as electricity, magnetism, and different types of forces. - Perform practical experiments to understand gravity, periodic motion,

	pressure, and heat, while recording and analyzing the results. • Assist students in connecting various concepts such as energy, motion, and forces. • Adopt a scientific dialogue approach in presenting topics, encouraging the exchange of questions and ideas between the teacher and students.
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	The student should distinguish between different types of standard units and use them accurately in physical measurements.	Standard units used in physical measurements	Deliver lectures using Information Technology (IT), such as computers.	Conduct practical and theoretical exams (mid-term and final exams).
2	5	The student should understand the concept of electricity and magnetism and analyze the effect of magnetic fields on materials and currents.	Electricity and magnetism	Deliver lectures using Information Technology (IT), such as computers.	Conduct practical and theoretical exams (mid-term and final exams).
3	5	The student should be able to define velocity and acceleration accurately.	Velocity and acceleration	Deliver lectures using Information Technology (IT), such as computers.	Conduct practical and theoretical exams (mid-term and final exams).
4	5	The student should understand and apply Newton's laws of motion, calculate weight using the law of gravity, and analyze the effects of forces on moving objects.	Newton's laws of motion, weight, and gravitational force	Deliver lectures using Information Technology (IT), such as computers.	Conduct practical and theoretical exams (mid-term and final exams).
5	5	The student should understand and apply the concepts of momentum and impulse, analyze collisions using the law of conservation of momentum, and use the impulse-momentum relationship to solve physics problems.	Momentum, impulse, impulse and collisions, impulse-momentum relationship	Deliver lectures using Information Technology (IT), such as computers.	Conduct practical and theoretical exams (mid-term and final exams).
6	5	The student should understand the concept of work and energy, identify different types of energy, and apply the principle of energy conservation in physical systems.	Work, energy, types of energy, and energy conservation	Deliver lectures using Information Technology (IT), such as computers.	Conduct practical and theoretical exams (mid-term and final exams).
7	5	The student should differentiate between conservative and non-conservative forces	Conservative and non-conservative forces	Deliver lectures using Information	Conduct practical and theoretical

		conservative forces, understand their effects on energy in physical systems, and apply these concepts to solve problems related to motion and energy.		Technology (IT), such as computers.	exams (mid-term and final exams).
8	5	The student should understand the concept of periodic motion, determine its characteristics such as period and frequency, and analyze different types of periodic motion such as pendulum motion and mechanical system oscillations.	Periodic motion	Deliver lectures using Information Technology (IT), such as computers.	Conduct practical and theoretical exams (mid-term and final exams).
9	5	The student should understand and apply the concepts of rotational torque, angular acceleration, and rotational kinetic energy, and analyze the effects of forces and torques on rotating bodies using appropriate physical laws.	Dynamics of rotational motion	Deliver lectures using Information Technology (IT), such as computers.	Conduct practical and theoretical exams (mid-term and final exams).
10	5	The student should understand the concept of torque, calculate it using appropriate equations, and apply it to analyze the effects of forces on rotating objects in various physical scenarios.	Rotational motion, static equilibrium, work done by torque	Deliver lectures using Information Technology (IT), such as computers.	Conduct practical and theoretical exams (mid-term and final exams).
11	5	The student should understand and apply the concepts of rotational kinetic energy and angular momentum, analyze objects in static equilibrium using physical laws, and solve rotational motion problems using appropriate equations.	Rotational kinetic energy, angular momentum, static equilibrium experiments, rotational motion problems	Deliver lectures using Information Technology (IT), such as computers.	Conduct practical and theoretical exams (mid-term and final exams).
12	5	The student should understand and analyze damped and driven oscillations, use physics equations to explain the effects of damping and driving forces on systems, and conduct experiments to examine periodic motion while analyzing the impact of factors such as amplitude and frequency.	Damped and driven oscillations, periodic motion experiment	Deliver lectures using Information Technology (IT), such as computers.	Conduct practical and theoretical exams (mid-term and final exams).

13	5	The student should understand the concept of gravitational potential energy, calculate it using appropriate equations, and analyze the effect of height and mass on stored energy in a system.	Gravitational potential energy	Deliver lectures using Information Technology (IT), such as computers.	Conduct practical and theoretical exams (mid-term and final exams).
14	5	The student should be able to understand the difference between heat and temperature, calculate heat transfer between objects using appropriate equations, and interpret the effects of temperature changes on matter in various physical contexts.	Heat and temperature	Deliver lectures using Information Technology (IT), such as computers.	Conduct practical and theoretical exams (mid-term and final exams).
15	5	The student should be able to understand the behavior of gases under different conditions, apply gas laws such as Boyle's Law, Charles's Law, and Gay-Lussac's Law to solve problems related to pressure, volume, and temperature, and analyze the effects of these factors on gases in physical systems.	Gases, pressure, and volume, laws of pressure	Deliver lectures using Information Technology (IT), such as computers.	Conduct practical and theoretical exams (mid-term and final exams).

11. Course Evaluation

Midterm Exam: **40 Marks** + Final Exam: **60 Marks** / **Total: 100 Marks**

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	"Fundamentals of Physics" – David Halliday, Robert Resnick, Jearl Walker. "University Physics" – Hugh D. Young, Roger A. Freedman
Main references (sources)	"Fundamentals of Physics" – David Halliday, Robert Resnick, Jearl Walker
Recommended books and references (scientific journals, reports...)	Physical Review Letters (PRL)
Electronic References, Websites	Library Genesis – libgen.rs Google Books – books.google.com Project Gutenberg – gutenberg.org

Course Description for Computer Principles1

1. Course Name:	
Computer Principles1	
2. Course Code:	
MTRA1106	
3. Semester / Year:	
Annual System	
4. Description Preparation Date:	
2025–2026	
5. Available Attendance Forms:	
Daily attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
45hrs./ units2	
7. Course administrator's name (mention all, if more than one name)	
Name: Eng. Mustafa Abdel Ghani Nasser Email: mustafmustaf952@gmail.com	
8. Course Objectives	
Course Objectives: The teaching of the course aims to provide students with knowledge about Basic computer in general.	- Encourage the student to write simple research towards previous lectures to create a state of balance between methodological information and source information - Urging the student to make practical projects on the computer and holding seminars among students about the methodology of the subject - Encourage the student to evaluate the answer of his fellow students from other students to develop . - Self-development
9. Teaching and Learning Strategies	
Strategy	Interactive Lectures Practical Demonstration Hands-on Training Lecture Documentation
10. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1st	2	Computer cycle phases, generations, data, and information	Computer Fundamentals	Theoretical	Daily Tests
2nd	2	Computer features, areas of use, and components	Computer Fundamentals	Theoretical	Daily Tests
3rd	2	Types and classification of computers	Computer Fundamentals	Video	Daily Tests
4th	2	Computer components: Physical parts, input, and output devices	Computer Components	Video	Daily Tests
5th	2	Computer case and software structure	Computer Components	Theoretical	Daily Tests
6th	2	Number systems and personal computer systems	Computer Components	Theoretical	Daily Tests
7th	2	Computer platform and factors to consider when purchasing a computer	Computer Components	Theoretical	Daily Tests
8th	2	Key features of personal computers and chapter questions	Computer Components	Theoretical	Daily Tests
9th	2	Cyber ethics, security violations, and computer security	Computer Security and Software Licenses	Explanatory Video	Daily Tests
10th	2	Computer software licenses and types of licenses	Computer Security and Software Licenses	Theoretical	Daily Tests
11th	2	Intellectual property and cyber hacking	Computer Security and Software Licenses	Theoretical	Daily Tests
12th	2	Cyber hacking and its types	Computer Security and Software Licenses	Theoretical	Daily Tests
13th	2	Hacking sources and common security risks	Computer Security and Software Licenses	View	Daily Tests
14th	2	Malware and computer viruses	Computer Security and Software Licenses	Theoretical	Daily Tests
15th	2	Virus damages and characteristics	Computer Security and Software Licenses	Video Tutorial	Daily Tests
11. Course Evaluation					
Midterm Exam: 40 Marks + Final Exam: 60 Marks / Total: 100 Marks					

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Basics of Computers and Office Applications
Main references (sources)	Al-Mustafa for Sciences – "Basics of Computers, Internet, and Office" Dr. Ziad Mohammed Aboud, Dar Al-Doctor for Publishing and Distribution, Baghdad.
Recommended books and references (scientific journals, reports...)	1. Encryption of a Text Using the Affine Cipher and Hiding It in a Colored Image by Using the Quantization Stage <i>Nada Abdul Aziz Mustafa, Iraq, Baghdad, University of Baghdad, College of Languages</i> 2. The Effect of the Smoothing Filter on an Image Encrypted by the Blowfish Algorithm, Then Hiding It in a BMP Image <i>Nada Abdul Aziz Mustafa, Iraq, Baghdad, University of Baghdad, College of Languages</i>
Electronic References, Websites	https://www.agitraining.com/books/microsoft-office-books/word-2010-digital-classroom-book

Course Description for Anatomy of body systems

1. Course Name:	
Anatomy of body systems	
2. Course Code:	
MTRA1201	
3. Semester / Year:	
Annual System	
4. Description Preparation Date:	
2025–2026	
5. Available Attendance Forms:	
Daily attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
75hrs./ units3	
7. Course administrator's name (mention all, if more than one name)	
Name: A.L. Mohammed Ali Hassan Jassim	
Email: mohmdg85@gmail.com	
8. Course Objectives	
Objectives of the subject: The purpose of teaching this subject is to provide students with knowledge about the basics of anatomy in general, and the anatomy of the human body systems in particular, including the structure and functions of the body's organs.	- By the end of the year, the student is typically prepared to understand the coursework in the following years and is trained and certified in human anatomy. - Provides a comprehensive understanding of the structure and function of the body's systems, which helps in medical, scientific, and practical applications. - General knowledge of how the body's organs work, relating them to the materials used in radiological procedures.
9. Teaching and Learning Strategies	
Combining active learning, continuous review, practical tools, and technology are the	Use illustrations, division and simplification, use tables and diagrams, divide the body into parts, practice with

most important factors that help you master anatomy effectively.	3D models or apps to explore anatomy, continuous review, presentations as well as focus on important details
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	explaining of the midbrain, cerebral hemispheres, and ventricles in terms of location, function, and responsibilities.	The midbrain, cerebral hemisphere, ventricles of the brain.	Lectures (Interactive) Online Lectures (Interactive) Role play Team-based learning (presentation) Discussion Problem solving	Midterm exams Final exams evaluations
2	2	Explaining of the hindbrain: location, structure, role and function	The hind brain: cerebellum, pons, and medulla oblongata.	Lectures (Interactive) Online Lectures (Interactive) Role play Team-based learning (presentation) Discussion Problem solving	Midterm exams Final exams evaluations
3	2	The meninges and meninges, their layers, types and functions are explained and studied.	Meninges and spinal meninges.	Lectures (Interactive) Online Lectures (Interactive) Role play Team-based learning (presentation) Discussion Problem solving	Midterm exams Final exams evaluations
4	2	A functional and anatomical study of the twelve cranial nerves in the human brain.	The cranial nerves.	Lectures (Interactive) Online Lectures (Interactive) Role play Team-based learning (presentation) Discussion Problem solving	Midterm exams Final exams evaluations
5	2	The lumbar and sacral plexuses are taught in detail.	Lumber and	Lectures (Interactive) Online Lectures (Interactive)	Midterm exams Final exams

			sacral plexuses.	Role play Team-based learning (presentation) Discussion Problem solving	evaluations
6+7	2+2	The respiratory system is studied in all its details. Study the cardiovascular system, heart and circulatory system	Respiratory system: lung, bronchial tree, vascular supply. Cardiovascular system: heart, heart chambers, major vessels.	Lectures (Interactive) Online Lectures (Interactive) Role play Team-based learning (presentation) Discussion Problem solving	Midterm exams Final exams evaluations
8	2	A detailed study of the digestive system and its parts, in terms of location and function.	Digestive system: pharynx, esophagus, and stomach.	Lectures (Interactive) Online Lectures (Interactive) Role play Team-based learning (presentation) Discussion Problem solving	Midterm exams Final exams evaluations
9+10	2+2	Study of the small and large intestines, including their anatomy, functions, and importance in the digestive process.	Digestive system: small intestine and blood supply to abdominal wall. Digestive system: large intestine.	Lectures (Interactive) Online Lectures (Interactive) Role play Team-based learning (presentation) Discussion Problem solving	Midterm exams Final exams evaluations
11	2	study the liver of human body, role, location, structure then function	Liver, biliary system, pancreas, and spleen.	Lectures (Interactive) Online Lectures (Interactive) Role play Team-based learning (presentation) Discussion Problem solving	Midterm exams Final exams evaluations
12+13	2+2+2	study the renal system of human body, role, location, structure and	Urinary system: kidney, ureter, urinary bladder, urethra, and blood	Lectures (Interactive) Online Lectures (Interactive) Role play	Midterm exams Final exams evaluations

		function Study the breast, lactation, and importance, including its anatomy and function.	supply. The breast: general anatomy, lobular structures.	Team-based learning presentation) Discussion Problem solving	
15+14	2	study of the reproductive system, including its anatomy, physiology, and clinical significance.	Male reproductive system. Female reproductive system.	Lectures (Interactive) Online Lectures (Interactive) Role play Team-based learning presentation) Discussion Problem solving	Midterm exams Final exams Evaluations

The grade of 100 is distributed according to the student's mandated tasks such as daily preparation, daily, oral, monthly and final examinations: according to the following order
40 degrees midterm exam distributed to **20** degrees theoretical, **15** degrees practical and **5** degrees for participation, attendance and non-class activities
60 degrees final exam distributed to **25** degrees for operation and **35** degrees for theory

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Grant's Atlas of Anatomy, 12th Edition Agur, Anne M.R.; Dalley, Arthur F.
Recommended books and references (scientific journals, reports...)	Elsevier, Science direct springer link.
Electronic References, Websites	www.who.int

Academic description of Systemic physiology

1. Course Name:					
Systemic physiology					
2. Course Code:					
MTRA1204					
3. Semester / Year:					
Annual System					
4. Description Preparation Date:					
2025–2026					
5. Available Attendance Forms:					
Daily attendance					
6. Number of Credit Hours (Total) / Number of Units (Total)					
75hrs./ units3					
7. Course administrator's name (mention all, if more than one name)					
Name: dr. Hakeem Ghani Hassan Email: alhamamy201567@gmail.com					
8. Course Objectives					
Course Objectives	1. Understand the fundamental mechanisms that operate in human body and how they interact. 2. Understand the functions of important physiological systems including the cardio, respiratory, renal, reproductive and digestive systems.				
9. Teaching and Learning Strategies					
Strategy	The study of Systemic Physiology is complex, and employing a range of teaching and learning strategies is crucial for helping students deeply understand physiological concepts and their clinical relevance. Active learning approaches, hands-on laboratory experiences, clinical case integration, and interactive multimedia tools are all essential in engaging students and improving their comprehension. By incorporating these strategies into teaching, educators can ensure that students develop both theoretical knowledge and practical skills necessary for understanding the human body's complex systems.				
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	5	Students will gain the ability to apply physiological principles	Physiology of cardiovascular system: Components	theoretical	Short exams and discuss

		to clinical practice, analyze physiological data, and communicate complex ideas effectively.	of CVS and their functions Systole, diastole, peripheral resistance		
Second	5	Students will gain the ability to apply physiological principles to clinical practice, analyze physiological data, and communicate complex ideas effectively.	Physiology of Respiratory system: Pulmonary ventilation, elastic recoil, pressure changes during inspiration and expiration, pulmonary volumes, alveolar ventilation, respiratory control centers, factors influence breathing	theoretical	Short exams and discuss
Third	5	Students will gain the ability to apply physiological principles to clinical practice, analyze physiological data, and communicate complex ideas effectively.	Physiology of Digestive system: stomach, gastric juice, regulation of stomach secretion, inhibition of secretion by nervous system, small intestine secretion	theoretical	Short exams and discuss
Forth	5	Students will gain the ability to apply physiological principles to clinical practice, analyze physiological data, and communicate complex ideas effectively.	Physiology of Pancreas and small and large intestine: pancreatic juice contains and function, regulation of pancreatic secretion, duodenum function, intestinal juice contents, large intestine	theoretical	Short exams and discuss
Fifth	5	Students will gain the ability to apply physiological principles to clinical practice,	Physiology of liver and gallbladder: liver functions, gallbladder function	theoretical	Short exams and discuss

		analyze physiological data, and communicate complex ideas effectively.	Arterial blood pressure estimation Physiology of renal system: Parts of urinary system, function of urinary system, urine formation process, glomerular filtration		
Sixth	5	Students will gain the ability to apply physiological principles to clinical practice, analyze physiological data, and communicate complex ideas effectively.	Physiology of renal system: Parts of urinary system, function of urinary system, urine formation process, glomerular filtration	theoretical	Short exams and discuss
Seventh	5	Students will gain the ability to apply physiological principles to clinical practice, analyze physiological data, and communicate complex ideas effectively.	Selective process of urine formation: Tubular reabsorption, Regulation of urine concentration and volume, tubular secretion, urine movements	theoretical	Short exams and discuss
Eighth	5	Students will gain the ability to apply physiological principles to clinical practice, analyze physiological data, and communicate complex ideas effectively.	Micturition: Micturition reflex regulation and urination	theoretical	Short exams and discuss
Ninth	5	Students will gain the ability to apply physiological principles to clinical practice, analyze physiological data, and communicate complex ideas	Female reproductive system: Puberty in females, menstrual cycle, menopause, female fertility and pregnancy	theoretical	Short exams and discuss

		effectively.			
Tenth	5	Students will gain the ability to apply physiological principles to clinical practice, analyze physiological data, and communicate complex ideas effectively.	Male reproductive system: Function, testosterone, puberty in males, regulation of male reproduction system, hormonal and neural mechanisms	theoretical	Short exams and discuss
Eleventh	5	Students will gain the ability to apply physiological principles to clinical practice, analyze physiological data, and communicate complex ideas effectively.	Physiology of nervous system: General organization, CNS, PNS, nerve fiber, brain parts, brainstem function, cerebrum function, nerve impulses, action potential, relax Arc, Motor system: Sensory system	theoretical	Short exams and discuss
Twelfth	5	Students will gain the ability to apply physiological principles to clinical practice, analyze physiological data, and communicate complex ideas effectively.	Tract of spinal cord: Descending, ascending, intersegmental	theoretical	Short exams and discuss
Thirteenth	5	Students will gain the ability to apply physiological principles to clinical practice, analyze physiological data, and communicate complex ideas effectively.	Physiology of spinal cord sections: Hemi section and complete section	theoretical	Short exams and discuss

Fourteenth	5	Students will gain the ability to apply physiological principles to clinical practice, analyze physiological data, and communicate complex ideas effectively.	Endocrine control mechanism: Adrenal gland hormone's role and function	theoretical	Short exams and discuss
Fifteenth	5	Students will gain the ability to apply physiological principles to clinical practice, analyze physiological data, and communicate complex ideas effectively.	Endocrine control mechanism: Pituitary gland hormone's role and function	theoretical	Short exams and discuss

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc

Mid-term exams: 25 %

Practical exam: 15%

Semester exams: 60%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Seeleys anatomy and physiology (eleven edition) Cinnamon L. VanPutte , Jennifer L. Regan , and Andrew F. Russo (2017)
Main references (sources)	Essentials of Human Anatomy & Physiology, Global Edition Suzanne Keller Elaine Marieb (2017)
Recommended books and references (scientific journals, reports...)	Human Anatomy and Physiology, Global Edition [Sep 14, 2015] Erin, C. Amerman
Electronic References, Websites	Study Guide to Human Anatomy and Physiology 1 (2012) Michael Harrell M.S.

وصف المقرر لمادة البايولوجي الإشعاعي

١.	اسم المقرر				
	البايولوجي الإشعاعي				
٢.	رمز المقرر:				
	MTRA1204				
٣.	الفصل/ السنة				
	نظام فصلي				
٤.	تاريخ إعداد هذا الوصف				
	2025-2026				
٥.	اشكال الحضور المتاحة :				
	حضور يومي				
٦.	عدد الساعات الدراسية (الكلي)/ عدد الوحدات (الكلي)				
	90 ساعة / (4) وحدات				
٧.	اسم مسؤول المقرر الدراسي (إذا اكثر من اسم يذكر)				
	الاسم: أ. د. اسمهان منير زينب الايمل: asmahanzinab@gmail.com				
٨.	اهداف المقرر				
	اهداف المادة الدراسية	١- التعرف على التأثير الإشعاعي الحيوي على الخلايا والأنسجة ٢- فهم الاستجابات المختلفة للخلايا الطبيعية والورمية لتأثير الأشعة ٣- دراسة تأثير الإشعاعات المؤينة في العلاج الإشعاعي			
٩.	استراتيجيات التعليم والتعلم				
	الاستراتيجية	-استخدام المناقشات والأنشطة التفاعلية لزيادة المشاركة والفهم (عصف ذهني) -طرح الأسئلة وتوجيه الطلاب لاستنتاج الاجابات -اكتساب معرفة عملية من خلال إجراء فحص مجهري وتجارب عملية -إجراء كويزات اسبوعية وشهرية ونهائية -اعداد الطالب للتعلم التعاوني ضمن مجموعات وإعداد تقارير التجارب			
١٠.	بنية المقرر				
	الاسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الوحدة او الموضوع	طريقة التعلم
	١	6	-دراسة ومعرفة الكيمياء	-مقدمة في علم الأحياء الإشعاعي –	نظري
					طريقة التقييم
					اختبارات نظرية

١	الإشعاعية	الكيمياء الإشعاعية -الحدث البدني الأولي -التحلل الإشعاعي للمياه -التأثير المباشر للإشعاع -التأثير غير المباشر	باستخدام الحاسوب وتجارب مخبرية	اسبوعية وفصلية ونهاية
٢	٦	دراسة ومعرفة الضرر الناجم عن التشعيع والاستجابة لتلف الحمض النووي	تأثير الأوكسجين -المحسسات الإشعاعية -أجهزة حماية الراديو الضرر الناجم عن التشعيع والاستجابة لتلف الحمض النووي أجهزة استشعار الضرر	محاضرة تفاعلية واستخدام الحاسوب
٣	٦	دراسة ومعرفة موت الخلايا المبرمج	موت الخلية بعد التشعيع -موت الخلايا المبرمج -الالتهم الذاتي النخر، الشيخوخة -كارثة الانقسام	محاضرة تفاعلية واستخدام الحاسوب
٤	٦	دراسة ومعرفة الإصلاح لأضرار الحمض النووي	الإصلاح الجزيئي لأضرار الحمض النووي -إصلاح استئصال القاعدة إعادة التركيب المتماثل -عدم التجانس والانضمام -هدف واح ضربة واحدة	محاضرة تفاعلية واستخدام الحاسوب
٥	٦	دراسة ومعرفة منحنيات بقاء الخلية	منحنيات بقاء الخلية -استعادة تأثيرات دورة الخلية -تعديل تأثير الإشعاع	محاضرة تفاعلية واستخدام الحاسوب
٦	٦	دراسة ومعرفة أنواع الأضرار الخلوية بسبب الإشعاع	أنواع الأضرار الخلوية بسبب الإشعاع -الأضرار القاتلة الأضرار القاتلة المحتملة	محاضرة تفاعلية واستخدام الحاسوب
٧	٦	دراسة ومعرفة البيولوجيا الإشعاعية لاستجابة والأعضاء للإشعاع	البيولوجيا الإشعاعية لاستجابة الأنسجة والأعضاء للإشعاع -الأكثر حساسية حساس -أقل حساسية -حساس،	محاضرة تفاعلية واستخدام الحاسوب
٨	٦	دراسة ومعرفة تأثير الإشعاع: تحت حاد، حاد، تأثيرات مزمنة	شدة تأثير الإشعاع: -تأثيرات تحت الحاد -التأثيرات الحادة -التأثيرات المزمنة	محاضرة تفاعلية واستخدام الحاسوب
٩	٦	دراسة ومعرفة استجابة الورم للإشعاع المؤثر العلاجي	-استجابة الورم للإشعاع - المؤشر العلاجي (العلاج الإشعاعي والأدوية المشتركة) -احتمال السيطرة على الورم	محاضرة تفاعلية واستخدام الحاسوب
١٠	٦	دراسة ومعرفة السلامة	-مقدمة للسلامة والأمن	محاضرة

اسبوعية وفصلية ونهائية	تفاعلية واستخدام الحاسوب	الحيوي -المكونات الرئيسية لإدارة المخاطر البيولوجية -احتياطات السلامة العالمية	والأمن الحيوي لإدارة المخاطر البيولوجية		
اختبارات نظرية اسبوعية وفصلية ونهائية	محاضرة تفاعلية واستخدام الحاسوب	-حواجز السلامة الحيوية في المختبرات -معدات الحماية الشخصية -تصميم المنشأة	-دراسة ومعرفة حواجز السلامة الحيوية في المختبر ومعدات الحماية الشخصية	6	١١
اختبارات نظرية اسبوعية وفصلية ونهائية	محاضرة تفاعلية استخدام الحاسوب	العوامل البيولوجية -طرق العدوى -أساس تدابير المراقبة -نظام تصنيف مجموعات الخطر -خزانة السلامة الحيوية	-دراسة ومعرفة العوامل البيولوجية -طرق العدوى مجموعات الخطر-السلامة الحيوية	6	١٢
اختبارات نظرية اسبوعية وفصلية ونهاية	محاضرة تفاعلية استخدام الحاسوب	المخاطر البيولوجية -مراقبة المواد الخطرة على الصحة -تقييم مخاطر العمل مع مخاطر الدم والأنسجة البشرية -مستوى الاحتواء	-دراسة ومعرفة المخاطر البيولوجية ومراقبة المواد الخطرة على الصحة -تقييم مخاطر العمل مع مخاطر الدم والأنسجة	6	١٣
اختبارات نظرية اسبوعية وفصلية ونهائية	محاضرة تفاعلية استخدام الحاسوب	-أنواع النفايات البيولوجية -فئات النفايات البيولوجية -إزالة التلوث من النفايات البيولوجية	-دراسة ومعرفة أنواع النفايات البيولوجية	6	١٤
اختبارات نظرية اسبوعية وفصلية ونهاية	محاضرة تفاعلية واستخدام الحاسوب	-نقل النفايات البيولوجية -لوائح النقل الدولي -نظام التغليف الثلاثي الأساسي	-دراسة ومعرفة نقل النفايات البيولوجية -نظام التغليف الثلاثي	6	١٥

١١. تقييم المقرر

يتم امتحان الطالب نصف فصلي (٤٠ درجة) + امتحان نهاية الفصل (٦٠ درجة) / المجموع ١٠٠ درجة

١٢. مصادر التعلم والتدريس

Seeleys anatomy and physiology (eleven edition) Cinnamon L. VanPutte , Jennifer L. Regan , and Andrew F. Russo (2017)	الكتب المقررة المطلوبة (المنهجية أن وجدت)
Essentials of Human Anatomy & Physiology, Global Edition Suzanne Keller Elaine Marieb (2017)	المراجع الرئيسة (المصادر)
Human Anatomy and Physiology, Global Edition [Sep 14, 2015] Erin, C. Amerman	الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية ، التقارير ...)
Study Guide to Human Anatomy and Physiology 1 (2012) Michael Harrell M.S.	المراجع الالكترونية، مواقع الانترنت

Course Description for Principles of Nursing

1. Course Name:	
Principles of Nursing	
2. Course Code:	
MTRA1205	
3. Semester / Year:	
Annual System	
4. Description Preparation Date:	
2025–2026	
5. Available Attendance Forms:	
Daily attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
90hrs./ units4	
7. Course administrator's name (mention all, if more than one name)	
Name: Abdulrahman abbas jasim Email: Abdulrahman.A.Albattat@alayen.edu.iq	
8. Course Objectives	
Course Objectives	This course aims to equip students with fundamental nursing knowledge and skills, including: - Understanding the basics of nursing, its concepts, importance, and professional development. - Mastering essential clinical skills, such as vital signs measurement, medication administration, wound care, and sterilization. - Effectively interacting with patients, including preparation for medical procedures and providing first aid. - Enhancing professional safety by applying biosafety principles and risk management. - Developing critical thinking and communication skills to support decision-making and teamwork in healthcare settings.
9. Teaching and Learning Strategies	
Strategy	his course utilizes diverse strategies to enhance learning, including: 1. Lectures & Demonstrations – Delivering theoretical knowledge and practical skills. 2. Discussions & Case Studies – Encouraging critical thinking and problem-solving. 3. Hands-on Practice & Group Work – Developing clinical skills and

	teamwork. 4. Assessments & Feedback – Evaluating progress through exams, reports, and discussions. 5. Self-Directed Learning & Technology – Promoting independent study and digital resources
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	6	Nursing, its importance and development among societies, the qualifications of nurse	Introduction about nursing	Lecture	Daily exam Report Monthly exam Discussion
2	6	Temperature measurement routes, heart pulse characteristics and measurement Sites	Vital signs	Lecture	Daily exam
3	6	Respiratory rate and respiratory types, blood pressure and blood ressuret es	Vital signs	Lecture	Report
4	6	Body mechanism, Patient positions types (erect, supine, dorsal recumbent, fowler's, lateral, pron, sim's, lithotomy, knee-chest, semi-fowler's, trendelenber e sitions)	Body mechanism	Lecture	Monthly exam
5	6	Drug administration routes (mouth, inhalation, rectum & vagina, injection) drugs storage, wei hts and measures	Drug administration	Lecture	Discussion
6	6	Basic principles of medical and surgical sterilization and disinfection	sterilization and disinfection	Lecture	Daily exam
7	6	Urinary catheterization and enema types	Urinary catheterization and enema types	Lecture	Report
8	6	Gastric lavage and artificial feeding	Gastric lavage and artificial feeding	Lecture	Monthly exam
9	6	Role of nurse in patient preparation for general radiography and special GIT and urinary system radiography	patient preparation for general radiography	Lecture	Discussion
10	6	Fundamental and application of first aid, artificial respiration t s	first aid	Lecture	Daily exam

		and CRP			
11	6	Wounds and hemorrhage types, arterial pressure points Dressing and bandages types and uses , surgical sutures types, removing sutures and clips, bandages uses techniques.	Wounds and hemorrhage types	Lecture	Report
12	6	First aid methods for poisoning, asphyxia and foreign bodies. Fractures , burns and electrical shock first aids Risks Characterization in biosecurity	First aid	Lecture	Monthly exam
13	6	Biosafety level Risk Assessment Strategy Hazard groups, biosafety levels, practices and equipment Standard practices required in biolo laboratories.	Biosafety level	Lecture	Discussion
14	6	Biorisk management system Assess the capability of the laboratory staff to control hazards Relation of risk groups to biosafety levels , practices of and equipment Mitigation Control Measures Sustainability of the bio-risk management system Stren enin biorisk mana ement	Biorisk management system Assessment	Lecture	Daily exam
15	6	• Accident response spill cleanup procedure Investigation of an accident inside the laboratory.	Accident response spill cleanup procedure	Lecture	Report

11. Course Evaluation

Midterm Exam: **40 Marks** + Final Exam: **60 Marks** / **Total:** 100 Marks

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1. Mosby's Pocket Guide to Nursing Skills & Procedures (2015). Eighth Edition. Anne Griffin Perry & Patricia A. Potter. Mosby's Elsevier Inc.
Main references (sources)	1. Drug Guide for Nursing Students (2015). Eleventh Edition . Linda Skidmore-Roth. Mosby's Elsevier Inc.

	2. Study Guide for Fundamentals of Nursing the Art and Science of Nursing Care (2011). Seventh Edition . Carol R. Taylor, Carol Lillis, Priscilla LeMone, Pamela Lynn & Marilee LeBon. Wolters Kluwer Lippincott Williams & Wilkins. 3. Fundamentals of Nursing Standards & Practice (2010). Fourth Edition. Sue C. DeLaune & Patricia K. Ladner. Delmar Cengage Learning Inc.
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

1. Course Name:					
Medical terminology					
2. Course Code:					
MTRA1207					
3. Semester / Year:					
Annual System					
4. Description Preparation Date:					
2025-2026					
5. Available Attendance Forms:					
Daily attendance					
6. Number of Credit Hours (Total) / Number of Units (Total):					
Number of Units (Total): 30 hours \ 2 Units					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Sherif Mohamed Abd El-Hamid					
Email: sherifmohammed@alayen.edu.iq					
8. Course Objectives					
Course Objectives		1- Identify the four word elements used to build medical words. 2- Divide medical words into their component parts. 3- Apply the basic rules to define and build medical words. 4- Locate the pronunciation guidelines chart and interpret pronunciation marks. 5- Pronounce medical terms. 6- Determine how to link combining forms and word roots to various types of suffixes. 7- List and identify the terms related to direction, position and planes of the body. 8- Describe the pathological conditions, diagnostic and therapeutic procedures and other terms related to the body system.			
9. Teaching and Learning Strategies					
Strategy		Interactive lectures: Presenting fundamental information about medical terms and their components (roots, prefixes, and suffixes) using practical examples. Demonstrations: Utilizing visual presentations such as slides and illustrations to clarify concepts. Decomposition and Analysis Exercises: Training students to analyze medical terms and interpret their meanings. Group Discussions: Explaining terms, exchanging ideas, and sharing experiences. Digital Resources: Such as explanatory videos, electronic medical dictionaries, and interactive websites. Presenting medical scenarios (clinical cases) and encouraging students to use medical terminology to solve related problems. Practical Training: Applying medical terminology in writing reports or reading medical records. Field Visits: Hospitals and medical centers to enhance practical understanding			
10. Course Structure					
Week	Hours	Required Learning	Unit or subject	Learning method	Evaluation

		Outcomes	name		method
Syllabus of The Theoretical Course					
1	2	- Understanding the basics of medical terminology. - Learning the foundation of building medical terms.	Structural analysis: Basic Elements of a medical word	- Use videos to explain complex medical concepts and procedures. - Incorporate images and diagrams to visually represent anatomy, medical conditions, and processes. - Create PowerPoint presentations to organize and highlight key medical terminology, processes, and systems.	Discussion and Quiz
2	2	Identifying the roots of words, suffixes in medical terms.	Suffixes	- Use videos to explain complex medical concepts and procedures. - Incorporate images and diagrams to visually represent anatomy, medical conditions, and processes. - Create PowerPoint presentations to organize and highlight key medical terminology, processes, and systems.	Discussion and Quiz
3	2	Studying common prefixes in medical terminology.	Prefixes	- Use videos to explain complex medical concepts and procedures. - Incorporate images and diagrams to visually represent anatomy, medical conditions, and processes. - Create PowerPoint presentations to organize and highlight key medical terminology, processes, and systems.	Discussion and Quiz
4	2	Identifying the roots of words, terminals, Conditions.	Roots, Word terminals, Conditions	Use videos to explain complex medical concepts and procedures.	Discussion and Quiz

				• Incorporate images and diagrams to visually represent anatomy, medical conditions, and processes. • Create PowerPoint presentations to organize and highlight key medical terminology, processes, and systems.	
5	2	Explaining the basic structure of the body	Terms concerning body structure	• Use videos to explain complex medical concepts and procedures. • Incorporate images and diagrams to visually represent anatomy, medical conditions, and processes. • Create PowerPoint presentations to organize and highlight key medical terminology, processes, and systems.	Discussion and Quiz
6	2	Studying medical terms specific to the skin.	Terms concerning integumentary system	• Use videos to explain complex medical concepts and procedures. • Incorporate images and diagrams to visually represent anatomy, medical conditions, and processes. • Create PowerPoint presentations to organize and highlight key medical terminology, processes, and systems.	Discussion and Quiz
7	2	Studying medical terms specific to the digestive system.	Terms concerning digestive system	• Use videos to explain complex medical concepts and procedures. • Incorporate images and diagrams to visually represent anatomy, medical conditions, and processes. • Create	Discussion and Quiz

				PowerPoint presentations to organize and highlight key medical terminology, processes, and systems.	
8	2	• Studying medical terms specific to the respiratory system. • Understanding terminology related to respiratory diseases and conditions.	Terms concerning respiratory system	• Use videos to explain complex medical concepts and procedures. • Incorporate images and diagrams to visually represent anatomy, medical conditions, and processes. • Create PowerPoint presentations to organize and highlight key medical terminology, processes, and systems.	Discussion and Quiz
9	2	Understanding terminology for various skin diseases and conditions.	Terms concerning the skins, its appendages	• Use videos to explain complex medical concepts and procedures. • Incorporate images and diagrams to visually represent anatomy, medical conditions, and processes. • Create PowerPoint presentations to organize and highlight key medical terminology, processes, and systems.	Discussion and Quiz
10	2	Understanding Terminology related to the vascular system.	Terms concerning cardiovascular system	• Use videos to explain complex medical concepts and procedures. • Incorporate images and diagrams to visually represent anatomy, medical conditions, and processes. • Create PowerPoint presentations to organize and highlight key medical terminology, processes, and systems.	Discussion and Quiz

11	2	- Studying medical terms specific to blood. - Understanding Terminology related to the lymphatic system.	Terms concerning blood, lymph and immune system	- Use videos to explain complex medical concepts and procedures. - Incorporate images and diagrams to visually represent anatomy, medical conditions, and processes. - Create PowerPoint presentations to organize and highlight key medical terminology, processes, and systems.	Discussion and Quiz
12	2	- Studying medical terms specific to the muscular system. - Understanding Terminology related to the skeletal system.	Terms concerning musculoskeletal system	- Use videos to explain complex medical concepts and procedures. - Incorporate images and diagrams to visually represent anatomy, medical conditions, and processes. - Create PowerPoint presentations to organize and highlight key medical terminology, processes, and systems.	Discussion and Quiz
13	2	- Studying medical terms specific to the endocrine system. - Understanding Terminology related to different types of glands.	Terms concerning the endocrine system	- Use videos to explain complex medical concepts and procedures. - Incorporate images and diagrams to visually represent anatomy, medical conditions, and processes. - Create PowerPoint presentations to organize and highlight key medical terminology, processes, and systems.	Discussion and Quiz
14	2	- Studying medical terms specific to the nervous system. - Understanding Terminology related to	Terms concerning the special senses	- Use videos to explain complex medical concepts and procedures. - Incorporate	Discussion and Quiz

		Neurological diseases and conditions.		images and diagrams to visually represent anatomy, medical conditions, and processes. • Create PowerPoint presentations to organize and highlight key medical terminology, processes, and systems.	
15	2	Understanding Terminology related to oncology.	Terms concerning the oncology	• Use videos to explain complex medical concepts and procedures. • Incorporate images and diagrams to visually represent anatomy, medical conditions, and processes. • Create PowerPoint presentations to organize and highlight key medical terminology, processes, and systems.	Discussion and Quiz

11.Course Evaluation

Monthly exam : 30 marks Final exam : 70 marks

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	- Nath, Judi Lindsley; Lindsley, Kelsey P. A Short Course in Medical Terminology. Wolters Kluwer Health, 2018. - David Andersson, Medical Terminology : The best and most effective way to memorize, pronounce and understand medical terms: second edition.
Main references (sources)	Nath, Judi Lindsley; Lindsley, Kelsey P. A Short course in Medical Terminology. Wolters Kluwer Health, 2018.
Recommended books and references (scientific journals, reports...)	Medical Terminology an illustrated guide.
Electronic References, Websites	

Course Description for Physics of atom

1. Course Name:	
Physics of atom	
2. Course Code:	
MTRA1202	
3. Semester / Year:	
Annual System	
4. Description Preparation Date:	
2025–2026	
5. Available Attendance Forms:	
Daily attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
75hrs./ units3	
7. Course administrator's name (mention all, if more than one name)	
Name: Mahmoud Mohamed Abo Halaka Ahmed	
Email: m.m.abohalaka@gmail.com & Mahmoud Mohammed@alayer.edu.iq	
8. Course Objectives	
Course Objectives	- Identifying types of ionizing radiation and understanding its interaction with matter. - Enabling students to acquire advanced knowledge of nanotechnology as an alternative energy source. - Introducing students to atomic and nuclear structure. - Encouraging students to work on advanced materials for renewable and green energy.
9. Teaching and Learning Strategies	
Strategy	- Presenting fundamental concepts while engaging students in active discussions. - Assigning students practical projects in the fields of radiation, renewable energy, and nanotechnology. - Providing digital learning materials such as videos and recorded lectures to enhance self-learning. - Using quizzes and practical reports to assess students' progress and understanding of the subject.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	Understand the components of the atom and nucleus and their properties.	Atomic and Nuclear Structure	Delivering Lectures Using Information Technology (Computer)	Conducting Practical and Theoretical Exams (Midterm + Final Semester Exams)
2	5	Analyze the types and mechanisms of radioactive decay.	Radioactive Decay, Radioactive materials, Activity and Half life	Delivering Lectures Using Information Technology (Computer)	Conducting Practical and Theoretical Exams (Midterm + Final Semester Exams)
3	5	Differentiate between various types of radiation and their physical properties.	Types of radiation	Delivering Lectures Using Information Technology (Computer)	Conducting Practical and Theoretical Exams (Midterm + Final Semester Exams)
4	5	Classify radiation based on its nature, source, and effects. Understand the nature of electromagnetic energy and its applications.	Classification of Radiation Electromagnetic Energy	Delivering Lectures Using Information Technology (Computer)	Conducting Practical and Theoretical Exams (Midterm + Final Semester Exams)
5	5	Explain the properties of visible light using the wave model.	Wave Model: Visible Light Particle Model: Quantum Theory Matter and energy	Delivering Lectures Using Information Technology (Computer)	Conducting Practical and Theoretical Exams (Midterm + Final Semester Exams)
6	5	Understand the mechanism of incoherent scattering and its impact on matter. Study the conditions for pair and triplet production and their effects in particle physics.	Incoherent scattering Pair and triplet production Compton scattering by free electrons Scattering and energy transfer coefficients stopping power	Delivering Lectures Using Information Technology (Computer)	Conducting Practical and Theoretical Exams (Midterm + Final Semester Exams)
7	5	Determine scattering and energy transfer coefficients and their effects on radiation absorption.	Photon Attenuation Coefficients	Delivering Lectures Using Information Technology (Computer)	Conducting Practical and Theoretical Exams (Midterm + Final Semester Exams)
8	5	Study how electrons interact with matter and their effects on various physical processes.	Interactions of electrons with matter	Delivering Lectures Using Information Technology (Computer)	Conducting Practical and Theoretical Exams (Midterm + Final Semester Exams)
9	5	Identify the properties of nanomaterials and their fabrication methods.	Introduction of Nanomaterials	Delivering Lectures Using Information Technology (Computer)	Conducting Practical and Theoretical Exams (Midterm + Final Semester Exams)

					Exams)
10	5	Explore the role of nanomaterials in medical and biological applications.	Applications of Nanomaterials in medicine and biology	Delivering Lectures Using Information Technology (Computer)	Conducting Practical and Theoretical Exams (Midterm + Final Semester Exams)
11	5	Analyze the role of nanotechnology in enhancing renewable energy systems.	Nanotechnology in renewable energy	Delivering Lectures Using Information Technology (Computer)	Conducting Practical and Theoretical Exams (Midterm + Final Semester Exams)
12	5	Understand the applications of nanomaterials in hydrogen production technologies.	systems Nanotechnology to Hydrogen Production	Delivering Lectures Using Information Technology (Computer)	Conducting Practical and Theoretical Exams (Midterm + Final Semester Exams)
13	5	Evaluate the use of nanomaterials in converting carbon dioxide into sustainable fuels and value-added products.	Nanomaterials for the Conversion of Carbon Dioxide into Renewable Fuels and Value-Added Products	Delivering Lectures Using Information Technology (Computer)	Conducting Practical and Theoretical Exams (Midterm + Final Semester Exams)
14	5	Study the role of nanomaterials in capturing and purifying carbon dioxide from the air.	Nanomaterials and Direct Air Capture of CO ₂	Delivering Lectures Using Information Technology (Computer)	Conducting Practical and Theoretical Exams (Midterm + Final Semester Exams)
15	5	Analyze the applications of nanotechnology in enhancing solar energy system efficiency.	Solar energy technology	Delivering Lectures Using Information Technology (Computer)	Conducting Practical and Theoretical Exams (Midterm + Final Semester Exams)

11. Course Evaluation

Midterm Exam: **40 Marks** + Final Exam: **60 Marks** / **Total: 100 Marks**

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	• "Introduction to Atomic and Nuclear Physics" H. Semat & J. R. Albright . • "Nuclear Physics: Principles and Applications" John Lilley • "Radiation Detection and Measurement" Glenn F. Knoll
Main references (sources)	• "Physics of Radiation Effects in Solids" – Kazuo Nishimura
Recommended books and	• Nuclear Physics A (Elsevier)

references (scientific journals, reports...)	• Journal of Nuclear Science and Technology (Taylor & Francis). • Radiation Physics and Chemistry (Elsevier)	
Electronic References, Websites	• IAEA (International Atomic Energy Agency) – www.iaea.org. • Khan Academy – Physics – www.khanacademy.org	

Course Description for Computer Principles2

1. Course Name:	
Computer Principles2	
2. Course Code:	
MTRA1206	
3. Semester / Year:	
Annual System	
4. Description Preparation Date:	
2025–2026	
5. Available Attendance Forms:	
Daily attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
45hrs./ units2	
7. Course administrator's name (mention all, if more than one name)	
Name: Eng. Mustafa Abdel Ghani Nasser Email: mustafmustaf952@gmail.com	
8. Course Objectives	
Course Objectives: The teaching of the course aims to provide students with knowledge about Basic computer in general.	- Encourage the student to write simple research towards previous lectures to create a state of balance between methodological information and source information - Urging the student to make practical projects on the computer and holding seminars among students about the methodology of the subject - Encourage the student to evaluate the answer of his fellow students from other students to develop .
9. Teaching and Learning Strategies	
Strategy	Interactive Lectures Practical Demonstration Hands-on Training Lecture Documentation

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1st	3	Computer cycle phases, generations, data, and information	Computer Fundamentals	Theoretical	Daily Tests
2nd	3	Computer features, areas of use, and components	Computer Fundamentals	Theoretical	Daily Tests
3rd	3	Types and classification of computers	Computer Fundamentals	Video	Daily Tests
4th	3	Computer components: Physical parts, input, and output devices	Computer Components	Video	Daily Tests
5th	3	Computer case and software structure	Computer Components	Theoretical	Daily Tests
6th	3	Number systems and personal computer systems	Computer Components	Theoretical	Daily Tests
7th	3	Computer platform and factors to consider when purchasing a computer	Computer Components	Theoretical	Daily Tests
8th	3	Key features of personal computers and chapter questions	Computer Components	Theoretical	Daily Tests
9th	3	Cyber ethics, security violations, and computer security	Computer Security and Software Licenses	Explanatory Video	Daily Tests
10th	3	Computer software licenses and types of licenses	Computer Security and Software Licenses	Theoretical	Daily Tests
11th	3	Intellectual property and cyber hacking	Computer Security and Software Licenses	Theoretical	Daily Tests
12th	3	Cyber hacking and its types	Computer Security and Software Licenses	Theoretical	Daily Tests
13th	3	Hacking sources and common security risks	Computer Security and Software Licenses	View	Daily Tests
14th	3	Malware and computer viruses	Computer Security and Software Licenses	Theoretical	Daily Tests
15th	3	Virus damages and characteristics	Computer Security and Software Licenses	Video Tutorial	Daily Tests
11. Course Evaluation					

Midterm Exam: **40 Marks** + Final Exam: **60 Marks** / **Total: 100 Marks**

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Basics of Computers and Office Applications
Main references (sources)	Al-Mustafa for Sciences – "Basics of Computers, Internet, and Office" Dr. Ziad Mohammed Aboud, Dar Al-Doctor for Publishing and Distribution, Baghdad.
Recommended books and references (scientific journals, reports...)	Encryption of a Text Using the Affine Cipher and Hiding It in a Colored Image by Using the Quantization Stage <i>Nada Abdul Aziz Mustafa, Iraq, Baghdad, University of Baghdad, College of Languages</i> The Effect of the Smoothing Filter on an Image Encrypted by the Blowfish Algorithm, Then Hiding It in a BMP Image <i>Nada Abdul Aziz Mustafa, Iraq, Baghdad, University of Baghdad, College of Languages</i>
Electronic References, Websites	https://www.agitraining.com/books/microsoft-office-books/word-2010-digital-classroom-book