

Academic description of Systemic physiology

1. Course Name:					
Systemic physiology					
2. Course Code:					
RT111 - FPH					
3. Semester / Year:					
Annual System					
4. Description Preparation Date:					
2024–2025					
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 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 to clinical practice, analyze physiological data, and communicate complex ideas effectively.	Physiology of cardiovascular system: Components of CVS and their functions Systole, diastole, peripheral resistance	theoretical	Short exams and discuss
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, analyze physiological data, and communicate complex ideas effectively.	Physiology of liver and gallbladder: liver functions, gallbladder function Arterial blood pressure estimation Physiology of renal system: Parts of urinary system, function of urinary system, urine formation process, glomerular filtration	theoretical	Short exams and discuss
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	Female reproductive system:	theoretical	Short exams and discuss

		to clinical practice, analyze physiological data, and communicate complex ideas effectively.	Puberty in females, menstrual cycle, menopause, female fertility and pregnancy		
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	Physiology of spinal cord sections: Hemi section and complete section	theoretical	Short exams and discuss

		complex ideas effectively.			
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 edit Cinnamon L. VanPutte , Jennifer L. Regan , and And F. Russo (2017)
Main references (sources)	Essentials of Human Anatomy & Physiology, Glo Edition Suzanne Keller Elaine Marieb (2017)
Recommended books and references (scientific journals, reports...)	Human Anatomy and Physiology, Global Edition [Sep 2015] Erin, C. Amerman
Electronic References, Websites	Study Guide to Human Anatomy and Physiology 1 (20 Michael Harrell M.S.

Course Description for Anatomy of body systems

1. Course Name:	
Anatomy of body systems	
2. Course Code:	
RT109-AGB	
3. Semester / Year:	
Annual System	
4. Description Preparation Date:	
2024–2025	
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 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
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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.	Lumbar and sacral plexuses.	Lectures (Interactive) Online Lectures (Interactive) Role play Team-based learning (presentation) Discussion Problem solving	Midterm exams Final exams 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	Urinary system: kidney, ureter,	Lectures (Interactive)	Midterm exams

		body, role, location, structure and function Study the breast, lactation, and importance, including its anatomy and function.	urinary bladder, urethra, and blood supply. The breast: general anatomy, lobular structures.	Online Lectures (Interactive) Role play Team-based learning presentation) Discussion Problem solving	Final exams evaluations
١٥+١٤	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

Course Description for Computer Principles2

1. Course Name:	
Computer Principles2	
2. Course Code:	
RT114-COM	
3. Semester / Year:	
Annual System	
4. Description Preparation Date:	
2024–2025	
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

Course Description for Physics of atom

1. Course Name:	
Physics of atom	
2. Course Code:	
RT110 -ATF	
3. Semester / Year:	
Annual System	
4. Description Preparation Date:	
2024–2025	
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@alayen.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 Principles of Nursing

1. Course Name:	
Principles of Nursing	
2. Course Code:	
RT113-NUR	
3. Semester / Year:	
Annual System	
4. Description Preparation Date:	
2024–2025	
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 ressuretes	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, trendelenberg and reverse trendelenberg positions)	Body mechanism	Lecture	Monthly exam
5	6	Drug administration routes (mouth, inhalation, rectum & vagina, injection), drugs storage, weights 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 and CRP	first aid	Lecture	Daily exam
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	

Course Description for Radiobiology

1. Course Name:	
Radiobiology	
2. Course Code:	
RT112 -RBI	
3. Semester / Year:	
Annual System	
4. Description Preparation Date:	
2024–2025	
5. Available Attendance Forms:	
Daily attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
90hrs./ 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	1- Understand the radiobiological effect of radiation on cells, tissues. 2- Understand the different responses of normal and tumor cells to radiation effect. 3- Study the effect of ionization radiation in radiotherapy.
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 Outcomes	Unit or subject name	Learning method	Evaluation method
1	6	-Study and knowledge about to Radiobiology Radiation chemistry	Introduction to Radiobiology Radiation chemistry: - Initial physical event - Radiolysis of water - Direct Effect of Radiation - Indirect Effect of Radiation	Theoretical (Computer-Based) & Laboratory Experiments	Weekly, Midterm, and Final Theoretical Tests
2	6	Study and know the Oxygen Effect Irradiation-induced damage and the DNA damage response - The DNA damage response - Sensors of damage	- Oxygen Effect (OER) - Radiosensitizers - RadioProtectors (DMF) □ Irradiation-induced damage and the DNA damage response - The DNA damage response - Sensors of damage	Theoretical (Computer-Based)	Weekly, Midterm, and Final Theoretical Tests
3	6	-Study and knowledge of Cell death after irradiation: - programmed cell death	Cell death after irradiation: - programmed cell death - Apoptosis - Autophagy - Necrosis, Senescence - mitotic catastrophe	Theoretical (Computer-Based)	Weekly, Midterm, and Final Theoretical Tests
4	6	-Study and know the Molecular Repair of DNA Damage - Base Excision Repair - Homologous Recombination	□ Molecular Repair of DNA Damage - Base Excision Repair - Homologous Recombination - Nonhomologous and Joining □ □ Target theory - Single target -Single hit, - Multiple target- single hitm	Theoretical (Computer-Based)	Weekly, Midterm, and Final Theoretical Tests
5	6	Cell survival curves - Recovery - Cell-Cycle Effects - Radiation Effect Modification	Theoretical using computer and laboratory experiments	Theoretical (Computer-Based)	Weekly, Midterm, and Final Theoretical Tests
6	6	-Study and learn about Types of Cellular Damage due to Radiation	Types of Cellular Damage due to Radiation - Lethal Damage - Potential Lethal Damage	Theoretical (Computer-Based)	Weekly, Midterm, and Final

		- Lethal Damage			Theoretical Tests
7	6	-Study and know the Radiobiology of Tissue and Organs Response to Radiation .	Radiobiology of Tissue and Organs Response to Radiation - The Most Sensitive - Sensitive - Moderately Sensitive - Less Sensitiv	Theoretical (Computer-Based)	Weekly, Midterm, and Final Theoretical Tests
8	6	-Study and knowledge The severity of radiation effect: - Subacute Effects	The severity of radiation effect: - Subacute Effects - Acute Effects - Chronic Effects	Theoretical (Computer-Based)	Weekly, Midterm, and Final Theoretical Tests
9	6	-Study and know the Tumor Response to Radiation - Therapeutic index (combined radiation and drug treatments) - Tumor control probability	Tumor Response to Radiation - Therapeutic index (combined radiation and drug treatments) - Tumor control probability - Normal Tissue complication Probability	Theoretical (Computer-Based)	Weekly, Midterm, and Final Theoretical Tests
10	6	-Study and knowledge the Introduction to Biosafety and Security - Key components of Biorisk Management - Components of safety in all laboratories	Introduction to Biosafety and Security - Key components of Biorisk Management - Components of safety in all laboratories - Universal safety precautions	Theoretical (Computer-Based)	Weekly, Midterm, and Final Theoretical Tests
11	6	-Study and know the Biosafety barriers in laboratories - Personal protective equipment(PPE) - Facility Design	Biosafety barriers in laboratories - Personal protective equipment(PPE) - Facility Design	Theoretical (Computer-Based)	Weekly, Midterm, and Final Theoretical Tests
12	6	-Study and knowledge of DNA transcription and translation and explanation with examples	Biological Agents - Routs of infection - Basis for control Measures - Hazard group classification system - A Biosafety cabinet (BSC)	Theoretical (Computer-Based)	Weekly, Midterm, and Final Theoretical Tests

13	6	-Study and knowledge the Biorisk and biohazards - Control of substances hazardous to health	Biorisk and biohazards - Control of substances hazardous to health - Assessing risk for work with human blood and tissues hazards - Control measures fo	Theoretical (Computer-Based)	Weekly, Midterm, and Final Theoretical Tests
14	6	-Study and knowledge the Types of biological wastes - Categories of biological wastes - Decontamination of biological wastes	Types of biological wastes - Categories of biological wastes - Decontamination of biological wastes	Theoretical (Computer-Based)	Weekly, Midterm, and Final Theoretical Tests
15	6	Study and knowledge the Transportation of biological wastes - International Transport Regulations	Transportation of biological wastes - International Transport Regulations - The Basic Triple Packaging System	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/

1. Course Name:	
Medical terminology	
2. Course Code:	
RT115-MED	
3. Semester / Year:	
Annual System	
4. Description Preparation Date:	
1-1-2025	
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 Outcomes	Unit or subject name	Learning method	Evaluation 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	Discussion and Quiz

				terminology, processes, and systems.	
4	2	Identifying the roots of words, terminals, Conditions.	Roots, Word terminals, Conditions	• 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
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	Terms concerning	• Use videos to explain complex	Discussion and Quiz

		digestive system.	digestive system	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.	
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	Discussion and Quiz

				visually represent anatomy, medical conditions, and processes. • Create PowerPoint presentations to organize and highlight key medical terminology, processes, and systems.	
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.	Discussion and Quiz

				• Create PowerPoint presentations to organize and highlight key medical terminology, processes, and systems.	
14	2	- Studying medical terms specific to the nervous system. - Understanding Terminology related to Neurological diseases and conditions.	Terms concerning the special senses	• 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
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	