

Course Description: Biostatistics and Computer Applications

1. Course Name:	
Biostatistics and computer applications	
2. Course Code:	
RT405-BCA	
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: assist lec. Milad Ali Talib Email: milad.a talib@gmail.com	
8. Course Objectives	
Course Objectives	- Understanding the fundamental concepts of biostatistics and using them in the analysis of medical and health data. - Developing computational and statistical skills to derive scientific results and make data-driven decisions. - Utilizing statistical software for data analysis and interpretation of research findings. - Applying statistical concepts in clinical studies and medical and health research. - Enhancing critical and logical thinking in data analysis and presenting evidence-based conclusions.
9. Teaching and Learning Strategies	
Strategy	- Interactive lectures to explain statistical concepts and their applications in the medical field. - Hands-on training on statistical software such as SPSS and Excel for data analysis. - Applied studies and research projects to enhance the practical understanding of statistical concepts. - Collaborative learning and problem-solving through discussions of real case studies. - Presentations and discussions on the latest applications in biostatistics.
10. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st	6	-Understanding basic concepts in biostatistics. -Creating frequency tables and cross-tabulation tables. -Analyzing and interpreting statistical distributions	Introduction to Biostatistics -Important Terms in Biostatistics -Types of Data -Data presentation • Frequency Table Presentation • Two way cross classification Tables • .Histogram • Frequency Polygon • . Pie Chart • . Scatter Plot	Interactive Lecture + Discussions	Quizzes and Application
2 nd	6	-Calculating the mean, median, and mode. -Understanding and using geometric, harmonic, and root mean square averages.	Arithmetical Description Measures -Central Tendency Measures (Mean, Median, Mode, Geometric Mean, Harmonic Mean. Root Mean Square)	Interactive Lecture + Discussions	Quizzes and Application
3 rd	6	-Calculating measures of dispersion such as standard deviation and variance. -Identifying outliers in data.	Dispersion Measures -Range and Interquartile -Mean deviation, standard deviation, Variance, Coefficient of Variation -Finding Outliers	Interactive Lecture + Discussions	Quizzes and Application
4 th	6	Calculating skewness and kurtosis to understand the distribution of data.	Kurtosis and Skewness -Moments -Kurtosis Measures -Skewness Measures	Interactive Lecture + Discussions	Quizzes and Application
5 th	6	Understanding null and alternative hypotheses in statistical tests.	Hypothesis Testing -Null and Alternatives Hypothesis -Region and Nonrejection area -Decision Making Error (Type1 and Type2)	Interactive Lecture + Discussions	Quizzes and Application
6 th	6	Conducting one-tailed hypothesis tests to interpret data.	Hypothesis Testing -Stegle Population Mean -Testing Ho by Means of a Confident Interval. - One Bird Hypothesis Tests	Interactive Lecture + Discussions	Quizzes and Application
7 th	6	Using the t-distribution in statistical tests when the population variance is unknown.	Hypothesis Testing -t distribution -Sampling From Normally Distributed Population: Population Variance Unknown. -Paired Comparisons(Student Test)	Interactive Lecture + Discussions	Quizzes and Application

8th	6	Applying hypothesis tests when the population variance is known.	Hypothesis Testing -The Difference between Two Population Means -Sampling from Normally Distributed. Population: Population Variance known -Sampling from Normally Distributed. Populations: Population Variance Unknown	Interactive Lecture + Discussions	Quizzes and Application
9th	6	Understanding the properties of the normal distribution and the standard normal distribution.	Normal Distribution -Normal Distribution and Standard Normal Distribution - p value, level of Significant	Interactive Lecture + Discussions	Quizzes and Application
10th	6	-Understanding the concept of precision in statistical tests. -Comparing the precision between two tests to determine the best one.	Diagnostic Accuracy Tests -prevalence -Accuracy -specificity -Sensitivity -Positive and Negative Predictive Value. -Comparing Accuracy between Two test.	Interactive Lecture + Discussions	Quizzes and Application
11th	6	Calculating the correlation coefficient (r) to determine the strength of the relationship between variables	Correlation and regression Simple Linear Regression Least Square Method -Correlation Coefficient (r) - r^2 -Testing significance of correlation	Interactive Lecture + Discussions	Quizzes and Application
12th	6	Understanding the characteristics of the chi-square distribution and using it in statistical analysis.	Chi Square test Characteristic features of Chi Square -Chi Square methods (Goodness of fit, test of independence, homogeneity) Examples on calculating expecting values. Hypothesis testing using Chi Square Test	Interactive Lecture + Discussions	Quizzes and Application
13th	6	Understanding the summary table of ANOVA results to interpret statistical outcomes.	One Way Anova Testing for the difference among the means of more than Two Groups. -Understand the summary Table of Anova results	Interactive Lecture + Discussions	Quizzes and Application
14th	6	-Understanding the use of estimation and its types in statistics. -Calculating confidence intervals using the t-distribution for the difference between	Estimation. -Estimation usage and types -Confident intervals using I distribution - Confident interval for the difference between two population Means variance known -Confident interval for the difference	Interactive Lecture + Discussions	Quizzes and Application

		two means when the population variance is known or unknown.	between two population Means variance unknown		
15 th	6	Analyzing birth rates to assess reproductive health and population.	Vital Statistics -Delivery rates -Deaths rates	Interactive Lecture + Discussions	Quizzes and Application
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					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)		1. Daniel, W.W. & Cross, C.L. (2018). Biostatistics: A Foundation for Analysis in the Health Sciences. Wiley. 2. Rosner, B. (2020). Fundamentals of Biostatistics. Cengage Learning. 3. Course Lectures			
Main references (sources)		1. Pagano, M. & Gauvreau, K. (2018). <i>Principles of Biostatistics</i>. CRC Press. 2. Glantz, S.A. (2012). <i>Primer of Biostatistics</i>. McGraw-Hill 3. "Biostatistics: A Foundation for Analysis in the Health Sciences" by Wayne Daniel, translated by Dr. Ziad Al-Rawi."Statistical Tests: Computer Applications Using SPSS" by Kamel Alwan.			
Recommended books and references (scientific journals, reports...)		1. Computer literacy BASICS 2012, LeBlanc, Brandon."A closer look at the, windows 7. 2009. 2. Computing Fundamentals, Innovative training works USA, Inc, 2006. 3. Journal of Biostatistics 4. International Journal of Biostatistics 5. American Journal of Public Health (AJPH) 6. Reports from WHO on Health Statistics.			
Electronic References, Websites		• www.who.int - منظمة الصحة العالمية • www.cdc.gov - مركز السيطرة على الأمراض والوقاية منها • www.biostathandbook.com - دليل الإحصاء الحيوي • www.khanacademy.org - دروس تعليمية في الإحصاء			

Course description for CT scan of the head, spine, chest, abdomen and pelvis

1. Course Name:	
CT scan of the head, spine, chest, abdomen and pelvis	
2. Course Code:	
RT401-CTH	
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)	
210hrs./ units4	
7. Course administrator's name (mention all, if more than one name)	
Name: assist lec. Milad Ali Talib Email: milad.a talib@gmail.com	
8. Course Objectives	
Course Objectives	1. Describe the basic principles and concepts of computed tomography. 2. Integrate the scanning techniques learned to better visualize anatomy and pathology. 3. Explain CT scanning protocols and prepare the patient for various head, spine, chest, and abdomen examinations. 4. Describe techniques used to manipulate CT parameters to improve image quality. 5. Identify the disadvantages of CT and describe techniques used to minimize their occurrence. 6. Compare the advantages and disadvantages of different CT scanner configurations.
9. Teaching and Learning Strategies	
Strategy	• Preparation of scientific material: Determined according to the approved curriculum, with the provision of comprehensive lectures that include the required topics and illustrative drawings to support understanding. • Interactive presentation methods: Using PowerPoint presentations, 3D videos, and interactive discussions to engage students in learning.

	• E-learning: Providing recorded videos after each lecture to review the content at any time, and using modern educational tools such as interactive electronic tests. • Case-based learning: Analyzing real images and linking them to clinical symptoms to understand the practical applications of CT imaging. • Problem-based learning: Enhancing critical thinking through analyzing and interpreting medical images. • Practical training and simulation: Training students to use CT scanners and field visits to hospitals to enhance applied skills. • Evaluation and feedback: Measuring understanding through short tests, weekly assignments, practical assessment, and review sessions to ensure comprehension of the material. • Enhancing interaction and participation: Granting additional marks for active participation, allocating time to answer students' inquiries, and ensuring clarity of the material. • Customizing strategies for each anatomical area: - Head and spine: strokes, head injuries, vertebral fractures. - Chest: infections, tumors, pulmonary embolism. - Abdomen and pelvis: appendicitis, kidney stones, trauma.
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st	7	Teaching students how to guide the patient through imaging to best view diseases for the lecture.	Review about CT machines: • Internal and external structures • Types of CT machines	Lecture + Practical	Quizzes and Oral Exams
2 nd	7	Teaching students how to guide the patient through imaging to best view diseases for the lecture.	Role of the CT technologist in: • Patient Management • Patient Screening • Patient safety and radiation protection	Lecture + Practical	Quizzes and Oral Exams
3 rd	7	Teaching students how to guide the patient through imaging to best view diseases for the lecture.	Radiographic Technique • Milliamperage, Kilovoltage, Helical Pitch • Rotation Time • Slice Thickness • Matrix Size and Reconstruction Algorithms Window setting: • Different levels • Different organs and exams	Lecture + Practical	Quizzes and Oral Exams

4 th	7	Teaching students how to guide the patient through imaging to best view diseases for the lecture.	Contrast Media usage: • Types of contrast media • Clinically; adverse reactions to CM CT injectors: • Injector preparation • Types of injectors • Administration of contrast agents	Lecture + Practical	Quizzes and Oral Exams
5 th	7	Teaching students how to guide the patient through imaging to best view diseases for the lecture.	CT scan of brain: • Brain intravenous contrast medium • CT venography • CT scan for the Stroke	Lecture + Practical	Quizzes and Oral Exams
6 th	7	Teaching students how to guide the patient through imaging to best view diseases for the lecture.	CT scan of petrous bone: • Indications • Patient Positioning • Technical Considerations • Scanning Protocols	Lecture + Practical	Quizzes and Oral Exams
7 th	7	Teaching students how to guide the patient through imaging to best view diseases for the lecture.	CT scan of orbit: • Technique and position • Scanning Protocols	Lecture + Practical	Quizzes and Oral Exams
8 th	7	Teaching students how to guide the patient through imaging to best view diseases for the lecture.	CT scan of paranasal sinus: • Indications • Patient Positioning • Technical Considerations • Scanning Protocols	Lecture + Practical	Quizzes and Oral Exams
9 th	7	Teaching students how to guide the patient through imaging to best view diseases for the lecture.	CT scan of skull and facial bone: • Patient Preparation & Positioning • Scanning Protocols	Lecture + Practical	Quizzes and Oral Exams
10 th	7	Teaching students how to guide the patient through imaging to best view diseases for the lecture.	CT scan of the neck: • Patient Preparation & Positioning • Scanning Protocols	Lecture + Practical	Quizzes and Oral Exams

11th	7	Teaching students how to guide the patient through imaging to best view diseases for the lecture.	CT scan of the pituitary gland: • Patient Preparation & Positioning • Scanning Protocols	Lecture + Practical	Quizzes and Oral Exams
12th	7	Teaching students how to guide the patient through imaging to best view diseases for the lecture.	CT scan of the spine: • cervical spine • dorsal spine	Lecture + Practical	Quizzes and Oral Exams
13th	7	Teaching students how to guide the patient through imaging to best view diseases for the lecture.	lumber spine • whole spine • Myelography	Lecture + Practical	Quizzes and Oral Exams
14th	7	Teaching students how to guide the patient through imaging to best view diseases for the lecture.	CT artifacts: • Detection • Remedies	Lecture + Practical	Quizzes and Oral Exams
15th	7	Teaching students how to guide the patient through imaging to best view diseases for the lecture.	Role of CT Compared with Other Imaging Modalities	Lecture + Practical	Quizzes and Oral Exams
16th	7	Teaching students how to guide the patient through imaging to best view diseases for the lecture.	CT of the Chest: • Cardiac CT • High Resolution CT	Lecture + Practical	Quizzes and Oral Exams
17th	7	Teaching students how to guide the patient through imaging to best view diseases for the lecture.	CT Angiography, • Indications • Patient Positioning and Preparation • Technical Considerations • Scanning Protocols	Lecture + Practical	Quizzes and Oral Exams
18th	7	Teaching students how to guide the patient through imaging to best view	CT of the esophagus and stomach: • CT in Esophageal	Lecture + Practical	Quizzes and Oral Exams

		diseases for the lecture.	CT of the stomach		
19th	7	Teaching students how to guide the patient through imaging to best view diseases for the lecture.	- CT of the small intestine - CT of the large bowel	Lecture + Practical	Quizzes and Oral Exams
20th	7	Teaching students how to guide the patient through imaging to best view diseases for the lecture.	Computed Tomography of the liver: - intravenous and native studies - early phase	Lecture + Practical	Quizzes and Oral Exams
21st	7	Teaching students how to guide the patient through imaging to best view diseases for the lecture.	Computed Tomography of the liver: - intravenous and native studies - early phase	Lecture + Practical	Quizzes and Oral Exams
22nd	7	Teaching students how to guide the patient through imaging to best view diseases for the lecture.	- late phase - delay phase	Lecture + Practical	Quizzes and Oral Exams
23rd	7	Teaching students how to guide the patient through imaging to best view diseases for the lecture.	Computed Tomography of the pancreas:	Lecture + Practical	Quizzes and Oral Exams
24th	7	Teaching students how to guide the patient through imaging to best view diseases for the lecture.	CT scan of the urinary system: - native scan - CT urography	Lecture + Practical	Quizzes and Oral Exams
25th	7	Teaching students how to guide the patient through imaging to best view diseases for the lecture.	CT scan of pelvis: - Male exams and preparation - Female exams and preparation	Lecture + Practical	Quizzes and Oral Exams
26th	7	Teaching students how to guide the patient through	CT scan of Trauma Clinical consideration	Lecture + Practical	Quizzes and Oral Exams

		imaging to best view diseases for the lecture.			
27 th	7	Teaching students how to guide the patient through imaging to best view diseases for the lecture.	Role of CT in interventional Applications • Abscess Drainage • Biopsy	Lecture + Practical	Quizzes and Oral Exams
28 th	7	Teaching students how to guide the patient through imaging to best view diseases for the lecture.	CT scan of Musculoskeletal System	Lecture + Practical	Quizzes and Oral Exams
29 th	7	Teaching students how to guide the patient through imaging to best view diseases for the lecture.	CT artifacts: • Detection • Remedies	Lecture + Practical	Quizzes and Oral Exams
30 th	7	Teaching students how to guide the patient through imaging to best view diseases for the lecture.	Cone Beam CT • Technique and position Role of CT Compared with Other Imaging Modalities	Lecture + Practical	Quizzes and Oral Exams
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					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)		Books prescribed by the Ministry of Higher Education for the comprehensive and scientific deepening of the subject of techniques. Radiography			
Main references (sources)		• Lois Romans, Computed Tomography for Technologists: Exam Review, 2nd Edition. • Euclid Seeram.P, "Computed tomography: physical principles, clinical applications, and quality control". 4th edition, Elsevier Inc. 2016. Matthias Hofer, "CT Teaching Manual Book ".			
Recommended books and references (scientific journals, reports...)		1. "Computed Tomography: Principles, Design, Artifacts, and Recent Advances" Hsieh, J. (2015). <i>Computed tomography: Principles, design, artifacts, and recent advances</i>. SPIE Press. https://doi.org/10.1117/3.2403034 2. "CT and MRI of the Whole Body" Haaga, J. R., & Boll, D. (2018). <i>CT and MRI of the whole body</i> (6th ed.). Elsevier.			

	https://www.elsevier.com/en-us/solutions/ct-and-mri-of-the-whole-body"Essentials of Radiology" Mettler, F. A. Jr. (2013). <i>Essentials of radiology</i>. Mosby. https://www.amazon.com/Essentials-Radiology-Fred-Mettler-Jr/dp/0323072639 3. "Diagnostic Imaging: Brain" Osborn, A. G. (2019). <i>Diagnostic imaging: Brain</i> (3rd ed.). Elsevier. https://www.elsevier.com/books/diagnostic-imaging/diagnostic-imaging-brain/9780323396094 4. Seeram Seeram, E. (2019). <i>Computed tomography: Physical principles, clinical applications, and quality control</i> (3rd ed.). Elsevier. Retrieved from z-lib.org 5. "Computed Tomography for Technologists" McCall, P., & Smith, L. (2015). <i>Computed tomography for technologists</i> (1st ed.). Wolters Kluwer. 6. "CT of Teaching Manual" by Matthias Hofer (2nd Edition) Hofer, M. (2015). <i>CT of teaching manual</i> (2nd ed.). Springer. 7. "CT Scan: Step by Step" by Sellular Sellular, A. (2015). <i>CT scan: Step by step</i>. (ISBN: 01531850001). Elsevier.
Electronic References, Websites	1. Radiopaedia: [Radiopaedia](https://radiopaedia.org). 2. Pub Med:[PubMed](https://pubmed.ncbi.nlm.nih.gov) 3. Radiology Society of North America (RSNA): The [RSNA](https://www.rsna.org) 4. CTisus - https://www.ctisus.com 5. European Society of Radiology (ESR) - https://www.myesr.org 6. Radiological Society of North America (RSNA) - https://www.rsna.org 7. edX - Biomedical Imaging and Applications - https://www.edx.org 8. University of New Mexico - Radiologic Sciences Program - https://radiology.unm.edu 9. MissionCIT - CT Imaging Courses - https://www.missioncit.com

Course description for Principles of medicine and surgery

1. Course Name:	
Principles of medicine and surgery	
2. Course Code:	
RT404-MED	
3. Semester / Year:	
Annual System	
4. Description Preparation Date:	
27-1-2025	
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: Ashwaq Fawzi Eassein Email: fawzieassein@gmail.com	
8. Course Objectives	
Course Objectives	1. To understand and teach the students the basics concepts of the internal diseases of the human body. 2. To teach and inform the students the essential concepts of the surgical diseases of the human body.
9. Teaching and Learning Strategies	
Strategy	- Asking questions and guiding students to discover the answers themselves. - Using animations and videos to explain scientific concepts. - Using discussions and interactive activities to increase engagement and understanding. - Assessing students' progress through continuous evaluations like short questions. - Allowing students to train in a real-world environment to acquire practical skills.

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	Headache	• Types • Imaging of headache	Delivering lectures using information technology (computer).	Conducting practical and theoretical exams (midterm + final semester exam)
2	5	Cerebrovascular accident (CVA)	imaging in CVA	Delivering lectures using information technology (computer).	Conducting practical and theoretical exams (midterm + final semester exam)
3	5	Bone disease	• Infection • Tumor	Delivering lectures using information technology (computer).	Conducting practical and theoretical exams (midterm + final semester exam)
4	5	Respiratory tract diseases	• Infections • Chest trauma • Lung masses	Delivering lectures using information technology (computer).	Conducting practical and theoretical exams (midterm + final semester exam)
5	5	Pulmonary embolism	pneumothorax pleural effusion	Delivering lectures using information technology (computer).	Conducting practical and theoretical exams (midterm + final semester exam)

6	5	Urinary tract infection	imaging in UTI	Delivering lectures using information technology (computer).	Conducting practical and theoretical exams (midterm + final semester exam)
7	5	GIT	diseases of esophagus	Delivering lectures using information technology (computer).	Conducting practical and theoretical exams (midterm + final semester exam)
8	5	Diseases of the stomach	• Gastric mass • Ulcer	Delivering lectures using information technology (computer).	Conducting practical and theoretical exams (midterm + final semester exam)
9	5	GIT	diseases of esophagus	Delivering lectures using information technology (computer).	Conducting practical and theoretical exams (midterm + final semester exam)
10	5	Diseases of duodenum	Duodenal ulcer (DU)	Delivering lectures using information technology (computer).	Conducting practical and theoretical exams (midterm + final semester exam)
11	5	Diseases of jejunum & ileum	Diseases of jejunum & ileum.	Delivering lectures using information technology	Conducting practical and theoretical exams

				(computer).	(midterm + final semester exam)
12	5	Diseases of colon	• Diseases of colon	Delivering lectures using information technology (computer).	Conducting practical and theoretical exams (midterm + final semester exam)
13	5	Liver	• Hepatitis • Jaundice	Delivering lectures using information technology (computer).	Conducting practical and theoretical exams (midterm + final semester exam)
14	5	Cholecystitis	• Cholecystitis • Portal hypertension	Delivering lectures using information technology (computer).	Conducting practical and theoretical exams (midterm + final semester exam)
15	5	Diseases of vascular system	• Diseases of vascular system	Delivering lectures using information technology (computer).	Conducting practical and theoretical exams (midterm + final semester exam)
16	5	Head injury	• The role of imaging in head injury	Delivering lectures using information technology (computer).	Conducting practical and theoretical exams (midterm + final semester exam)

17	5	Paranasal sinuses	imaging in paranasal sinuses diseases	Delivering lectures using information technology (computer).	Conducting practical and theoretical exams (midterm + final semester exam)
18	5	The orbit	imaging in orbital diseases	Delivering lectures using information technology (computer).	Conducting practical and theoretical exams (midterm + final semester exam)
19	5	The spine	imaging of spinal lesions	Delivering lectures using information technology (computer).	Conducting practical and theoretical exams (midterm + final semester exam)
20	5	The neck	role of imaging in neck masses	Delivering lectures using information technology (computer).	Conducting practical and theoretical exams (midterm + final semester exam)
21	5	Bone fracture	types & imaging	Delivering lectures using information technology (computer).	Conducting practical and theoretical exams (midterm + final semester exam)

22	5	Urinary tract obstruction	causes clinical features imaging	Delivering lectures using information technology (computer).	Conducting practical and theoretical exams (midterm + final semester exam)
23	5	Renal & vesical tumors	- Types - Features - imaging	Delivering lectures using information technology (computer).	Conducting practical and theoretical exams (midterm + final semester exam)
24	5	Cystic diseases of kidney	congenital anomalies of urinary tract.	Delivering lectures using information technology (computer).	Conducting practical and theoretical exams (midterm + final semester exam)
25	5	Hepatic masses	role of imaging	Delivering lectures using information technology (computer).	Conducting practical and theoretical exams (midterm + final semester exam)
26	5	Breast masses	- benign & - malignant	Delivering lectures using information technology (computer).	Conducting practical and theoretical exams (midterm + final semester exam)

27	5	Female reproductive system	infertility causes role of imaging	Delivering lectures using information technology (computer).	Conducting practical and theoretical exams (midterm + final semester exam)
28	5	Tumors of uterus & ovaries	• Tumors of uterus • & ovaries	Delivering lectures using information technology (computer).	Conducting practical and theoretical exams (midterm + final semester exam)
29	5	Male reproductive system	• Infertility causes & role of imaging	Delivering lectures using information technology (computer).	Conducting practical and theoretical exams (midterm + final semester exam)
30	5	Prostate	• Diseases • prostate enlargement • Methods of treatments	Delivering lectures using information technology (computer).	Conducting practical and theoretical exams (midterm + final semester exam)

11. Course Evaluation

The students will be assessed through a midterm exam (40 marks) + a final exam (60 marks), with a total of 100 marks.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	1. O. James Garden & Rowan W Parks, "Principles and Practice of Surgery" 7th Edition, Elsevier, 2017.

	2. Stuart H. Ralston, "Davidson Principles & Practice of Medicine", 23rd edition, Elsevier 2018.
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description for Ultrasound Imaging

1. Course Name:	
Ultrasound Imaging	
2. Course Code:	
RT403-AUI	
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)	
210hrs./ units4	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr.Basman Radhi Majeed Email: basmanradhi@gmail.com	
8. Course Objectives	
Course Objectives	1. Understand the Physical Principles of Ultrasound: – Comprehend the basic concepts of acoustical physics as they apply to ultrasound technology. – Understand how ultrasound waves are generated and how they interact with biological tissues. 2. Familiarize with Equipment and Instrumentation: – Identify and understand the components of ultrasound equipment and their functions. – Learn how to set up and calibrate machines for various examination types. 3. Develop Clinical Skills: – Master correct probe positioning techniques and fundamental scanning procedures. – Interpret sonographic images and identify appropriate clinical sonography protocols. 4. Image Interpretation and Reporting:

	- Develop the skills necessary to analyze and interpret ultrasound examination results. - Gain the ability to write scientific reports based on imaging findings and provide clinical recommendations. 5. Ethical and Safety Considerations: - Understand the ethical considerations of using ultrasound in clinical practice. - Recognize safety standards and procedures to address potential risks. 6. Advanced Specializations: - Explore the applications of ultrasound in various specialties such as cardiology, obstetrics, vascular, and gastrointestinal imaging. - Study real-world case scenarios to enhance clinical decision-making skills.
9. Teaching and Learning Strategies	
Strategy	1. Theoretical Lectures: - Deliver lectures that cover the foundational theories of acoustical physics, equipment operation, and imaging techniques. - Use multimedia presentations and visual aids to clarify complex concepts. 2. Hands-On Training: - Conduct practical sessions in simulated labs equipped with ultrasound imaging machines. - Supervise by experienced instructors to help students master equipment usage and scanning techniques. 3. Interactive Classrooms: - Encourage interactive discussions around case studies and real patient imaging scenarios. - Utilize group learning sessions to promote critical thinking and problem-solving skills. 4. Case-Based Learning: - Analyze real clinical cases and use the resulting images to reinforce learning. - Develop decision-making skills by discussing treatment plans and diagnostic considerations. 5. Continuous Assessment and Feedback: - Provide regular quizzes and evaluative questions to measure student progress. - Offer immediate and precise feedback to strengthen learning and address weaknesses. 6. Virtual Simulations:

	- Use software and virtual simulators to provide realistic experiences and examine various scenarios. - Train students to handle different and potential situations in a risk-free environment. 7. Distance Learning and Hybrid Education: - Offer online learning resources such as instructional videos and downloadable materials to enhance self-directed learning. - Use hybrid learning platforms that combine face-to-face and virtual education to ensure flexibility.
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st	7	Principle of ultrasound and its terms	Principle of ultrasound and its terms	Lecture + Practical	Quizzes and Oral Exams
2 nd	7	Liver scan , normal pattern	Liver scan , normal pattern	Lecture + Practical	Quizzes and Oral Exams
3 rd	7	Liver abnormality	Liver abnormality	Lecture + Practical	Quizzes and Oral Exams
4 th	7	Cystic lesions in normal or large liver	Cystic lesions in normal or large liver	Lecture + Practical	Quizzes and Oral Exams
5 th	7	Differential diagnosis of liver masses, Trauma of the liver	Differential diagnosis of liver masses, Trauma of the liver	Lecture + Practical	Quizzes and Oral Exams
6 th	7	Normal appearance gallbladder and biliary tract	Normal appearance gallbladder and biliary tract	Lecture + Practical	Quizzes and Oral Exams
7 th	7	abnormal gallbladder and biliary tract:	abnormal gallbladder and biliary tract:	Lecture + Practical	Quizzes and Oral Exams
8 th	7	Thick gallbladder walls, Small gallbladder, Gallbladder in jaundice	Thick gallbladder walls, Small gallbladder, Gallbladder in jaundice	Lecture + Practical	Quizzes and Oral Exams

9th	7	Normal and abnormal appearance of the pancreas	Normal and abnormal appearance of the pancreas	Lecture + Practical	Quizzes and Oral Exams
10th	7	Normal and abnormal appearance of the spleen	Normal and abnormal appearance of the spleen	Lecture + Practical	Quizzes and Oral Exams
11th	7	Normal appearance of the kidney and ureters Consideration of absent kidney Abnormal kidney : large kidney	Normal appearance of the kidney and ureters Consideration of absent kidney Abnormal kidney : large kidney	Lecture + Practical	Quizzes and Oral Exams
12th	7	Renal cysts, Renal masses	Renal cysts, Renal masses	Lecture + Practical	Quizzes and Oral Exams
13th	7	Small kidney, Renal calculi, – Trauma, Perirenal fluid	Small kidney, Renal calculi, – Trauma, Perirenal fluid	Lecture + Practical	Quizzes and Oral Exams
14th	7	Normal and abnormal appearance of the urinary bladder	Normal and abnormal appearance of the urinary bladder	Lecture + Practical	Quizzes and Oral Exams
15th	7	Normal and abnormal appearance of the thyroid gland	Normal and abnormal appearance of the thyroid gland	Lecture + Practical	Quizzes and Oral Exams
16th	7	Gynaecology (non–pregnant female pelvis: normal appearance of the uterus	Gynaecology (non–pregnant female pelvis: normal appearance of the uterus	Lecture + Practical	Quizzes and Oral Exams
17th	7	Intrauterine contraceptive device, fluid in the posterior cul–de–sac	Intrauterine contraceptive device, fluid in the posterior cul–de–sac	Lecture + Practical	Quizzes and Oral Exams

18th	7	The endometrium position of the uterus ovaries	The endometrium position of the uterus ovaries	Lecture + Practical	Quizzes and Oral Exams
19th	7	Ovaries: normal appearance of the ovary ovarian follicles	Ovaries: normal appearance of the ovary ovarian follicles	Lecture + Practical	Quizzes and Oral Exams
20th	7	Abnormal uterus: myomas, malignant disease	Abnormal uterus: myomas, malignant disease	Lecture + Practical	Quizzes and Oral Exams
21st	7	Appearance of the uterine endometriosis	Appearance of the uterine endometriosis	Lecture + Practical	Quizzes and Oral Exams
22nd	7	Abnormal ovary: Ovarian cysts, pelvic hydatid cysts	Abnormal ovary: Ovarian cysts, pelvic hydatid cysts	Lecture + Practical	Quizzes and Oral Exams
23rd	7	solid ovarian masses	solid ovarian masses	Lecture + Practical	Quizzes and Oral Exams
24th	7	Pelvic inflammatory disease, pelvic abscess, pelvic varices, fallopian tubes	Pelvic inflammatory disease, pelvic abscess, pelvic varices, fallopian tubes	Lecture + Practical	Quizzes and Oral Exams
25th	7	Obstetrics: Introduction to obstetrics	Obstetrics: Introduction to obstetrics	Lecture + Practical	Quizzes and Oral Exams
26th	7	Early pregnancy, ectopic pregnancy	Early pregnancy, ectopic pregnancy	Lecture + Practical	Quizzes and Oral Exams
27th	7	The appearance of the embryo yolk sac multiple pregnancy	The appearance of the embryo yolk sac multiple pregnancy	Lecture + Practical	Quizzes and Oral Exams
28th	7	Abnormalities in the first trimester of the pregnancy	Abnormalities in the first trimester of the pregnancy	Lecture + Practical	Quizzes and Oral Exams

29 th	7	Estimation of fetal size and age (fetal biometry)	Estimation of fetal size and age (fetal biometry)	Lecture + Practical	Quizzes and Oral Exams
30 th	7	Normal and abnormal appearance of the testis: Unilateral swelling, Small or absent testis	Normal and abnormal appearance of the testis: Unilateral swelling, Small or absent testis	Lecture + Practical	Quizzes and Oral Exams

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

12. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	P.E.S. Palmer, "Manual of diagnostic ultrasound", 2000
Main references (sources)	
Recommended books and references (scientific journals, reports...)	1. "Ultrasound: The Requisites" by Barbara S. Hertzberg and William D. Middleton - This book is known for its concise and comprehensive approach, making it a great resource for both beginners and experienced practitioners. 2. "Diagnostic Ultrasound" by Carol M. Rumack, Deborah Levine, and Christopher Redgrave - This comprehensive textbook offers detailed coverage of ultrasound principles and techniques across various specialties. 3. "Point of Care Ultrasound" by Nilam Soni, Robert Arntfield, and Pierre Kory - This is a practical guide focused on point-of-care ultrasound techniques and is useful for clinicians of all levels. 4. "Musculoskeletal Ultrasound" by Marnix T. van Holsbeeck and Joseph H. Introcaso - An essential guide for musculoskeletal imaging, providing clear explanations and detail-rich images. 5. "Ultrasound Physics and Instrumentation" by Frank Miele - This book focuses on the fundamental principles of ultrasound physics and the operation of ultrasound equipment.

	Scientific Journals: 1. "Ultrasound in Medicine & Biology" - This journal publishes scientific articles on the use of ultrasound in both clinical and experimental settings. 2. "Journal of Ultrasound in Medicine" - The official journal of the American Institute of Ultrasound in Medicine, offering peer-reviewed articles on clinical and research ultrasound. 3. "Radiology" - Although it covers all imaging modalities, Radiology often publishes significant research and reviews concerning ultrasound imaging. 4. "European Journal of Ultrasound" (Ultraschall in der Medizin) - Offers articles that cover new developments and research in medical ultrasound imaging. 5. "Clinical Ultrasound" - This journal focuses on clinical applications and advancements in ultrasound technology.
Electronic References, Webs	Radiopaedia: [Radiopaedia] (https://radiopaedia.org) is a free educational radiology resource with articles and cases covering a broad range of topics, including ultrasound imaging. PubMed: [PubMed](https://pubmed.ncbi.nlm.nih.gov) is a free search engine accessing primarily the MEDLINE database of references and abstracts on life sciences and biomedical topics. You can find numerous research articles on ultrasound imaging here. Radiology Society of North America (RSNA): The [RSNA](https://www.rsna.org) website provides resources and articles on different imaging techniques, including ultrasound. American Institute of Ultrasound in Medicine (AIUM): [AIUM](https://www.aium.org) offers a variety of resources, guidelines, and educational materials related to ultrasound imaging. MedlinePlus: Provided by the U.S. National Library of Medicine, [MedlinePlus](https://medlineplus.gov/ultrasound.html) offers reliable and up-to-date information about ultrasound and other medical imaging techniques.

	The Ultrasound Site: [The Ultrasound Site](https://www.theultrasoundsite.co.uk) is a dedicated platform for education related to musculoskeletal ultrasound scanning. Society of Radiologists in Ultrasound (SRU): The [SRU](https://www.sru.org) website provides guidelines, news, and educational opportunities related to ultrasound.
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Course description Magnetic resonance imaging

1. Course Name:	
Magnetic resonance imaging	
2. Course Code:	
RT402–MRI	
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)	
210hrs./ units4	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. raad ajeel Email: raadajeel@yahoo.com	
8. Course Objectives	
Course Objectives	1. Mastering MRI Procedures – Equip students with the knowledge and skills necessary to perform MRI examinations for various body systems with accuracy and efficiency. 2. Effective Use of Contrast Media – Train students on selecting and administering contrast agents in MRI scans to enhance image quality and diagnostic accuracy. 3. Conducting Advanced Examinations – Enable students to perform advanced imaging procedures such as arterial and venous angiography and cardiac MRI. 4. Tumor Diagnosis Using Functional MRI – Prepare students to utilize functional MRI for differentiating between benign and malignant tumors with high precision. 5. Brain Activity Analysis – Train students to conduct specialized examinations to measure brain activity and detect diseases associated with abnormal brain function. 6. Enhancing Radiology Technicians' Skills – Develop the technical and practical competencies of students to become skilled MRI radiology technicians capable of working professionally in the field.

9. Teaching and Learning Strategies

Strategy	Theoretical and Practical Learning – Provide an integrated approach combining theoretical lectures and hands-on training to enhance students' understanding of MRI principles and techniques. Equipment Operation Training – Equip students with the skills required to operate MRI machines and use advanced software for medical image analysis. Clinical Case Studies – Analyze real clinical cases to help students apply theoretical concepts in a real-world medical setting. Continuous Assessment – Implement diverse evaluation methods, including theoretical exams, practical assessments, and research projects, to ensure learning outcomes are achieved. Integration with Hospitals and Medical Centers – Offer clinical training opportunities in hospitals and specialized centers to strengthen students' practical skills in a professional environment.
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1–2	14	Teaching students how to guide patients during MRI imaging to obtain optimal diagnostic views for detecting diseases.	MRI terms	Lecture + Practical	Quizzes and Oral Exams
3–4	14	Teaching students how to guide patients during MRI imaging to obtain optimal diagnostic views for detecting diseases.	Concepts of MRI	Lecture + Practical	Quizzes and Oral Exams
5–6	14	Teaching students how to guide patients during MRI imaging to obtain optimal diagnostic views for detecting diseases.	Principles of MRI	Lecture + Practical	Quizzes and Oral Exams
7–8	14	Teaching students how to guide patients during MRI imaging to obtain optimal diagnostic views for detecting diseases.	Pulse sequences and image contrast	Lecture + Practical	Quizzes and Oral Exams
9	7	Teaching students how to guide patients during MRI imaging to obtain optimal diagnostic views for detecting diseases.	Artifacts and their composition.	Lecture + Practical	Quizzes and Oral Exams

10–11	14	Teaching students how to guide patients during MRI imaging to obtain optimal diagnostic views for detecting diseases.	MRI safety, preparation and contrast agent	Lecture + Practical	Quizzes and Oral Exams
12–13	14	Teaching students how to guide patients during MRI imaging to obtain optimal diagnostic views for detecting diseases.	MRI of the brain.	Lecture + Practical	Quizzes and Oral Exams
14	7	Teaching students how to guide patients during MRI imaging to obtain optimal diagnostic views for detecting diseases.	MRI of the orbital and sella turcica.	Lecture + Practical	Quizzes and Oral Exams
15	7	Teaching students how to guide patients during MRI imaging to obtain optimal diagnostic views for detecting diseases.	MRI of the cervical spinal cord	Lecture + Practical	Quizzes and Oral Exams
16	7	Teaching students how to guide patients during MRI imaging to obtain optimal diagnostic views for detecting diseases.	MRI of the thoracic and lumbar	Lecture + Practical	Quizzes and Oral Exams
17	7	Teaching students how to guide patients during MRI imaging to obtain optimal diagnostic views for detecting diseases.	MRI of the neck.	Lecture + Practical	Quizzes and Oral Exams
18	7	Teaching students how to guide patients during MRI imaging to obtain optimal diagnostic views for detecting diseases.	MRI of the chest (lung + mediastinum)	Lecture + Practical	Quizzes and Oral Exams
19–20	14	Teaching students how to guide patients during MRI imaging to obtain optimal diagnostic views for detecting diseases.	MRI of the abdomen (renal + liver + spleen + bowel).	Lecture + Practical	Quizzes and Oral Exams
21	7	Teaching students how to guide patients during MRI imaging to obtain	MRI of the biliary tree and pancreas	Lecture + Practical	Quizzes and Oral Exams

		optimal diagnostic views for detecting diseases.			
22	7	Teaching students how to guide patients during MRI imaging to obtain optimal diagnostic views for detecting diseases.	MRI of the male pelvis.	Lecture + Practical	Quizzes and Oral Exams
23	7	Teaching students how to guide patients during MRI imaging to obtain optimal diagnostic views for detecting diseases.	MRI of the female pelvis	Lecture + Practical	Quizzes and Oral Exams
24	7	Teaching students how to guide patients during MRI imaging to obtain optimal diagnostic views for detecting diseases.	MRI of the shoulder joint.	Lecture + Practical	Quizzes and Oral Exams
25	7	Teaching students how to guide patients during MRI imaging to obtain optimal diagnostic views for detecting diseases.	MRI of the hip joint.	Lecture + Practical	Quizzes and Oral Exams
26	7	Teaching students how to guide patients during MRI imaging to obtain optimal diagnostic views for detecting diseases.	MRI of the knee joint.	Lecture + Practical	Quizzes and Oral Exams
27	7	Teaching students how to guide patients during MRI imaging to obtain optimal diagnostic views for detecting diseases.	MRI in obstetric.	Lecture + Practical	Quizzes and Oral Exams
28	7	Teaching students how to guide patients during MRI imaging to obtain optimal diagnostic views for detecting diseases.	MRA and MRV	Lecture + Practical	Quizzes and Oral Exams
29	7	Teaching students how to guide patients during MRI imaging to obtain optimal diagnostic views for detecting diseases.	MRI of the trauma and suspected fracture	Lecture + Practical	Quizzes and Oral Exams

30	7	Teaching students how to guide patients during MRI imaging to obtain optimal diagnostic views for detecting diseases.	MRI of the soft tissue tumor.	Lecture + Practical	Quizzes and Oral Exams
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					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)		Training bag			
Main references (sources)		-Step by step MRI: Jaganmohan, V Prasad. -Planning and Positioning in MRI: Anne Bright. -Handbook of MRI scanning: Geraldine Burghart, Carol Ann Finn. -Gaillard F, Balthazar S, Bell D, et al. Pituitary MRI (an approach). Reference article, Radiopaedia.org. -Introduction to sectional anatomy: Michael E. Madden.			
Recommended books and references (scientific journals, reports...)		1. 1. MRI Physics and Principles: MRI Made Easy by Govind B. Chavhan 2. 2. Anatomy and Pathology in MRI:Atlas of Human Anatomy by Frank H. Netter 3. 3. Specialized Topics: Functional Magnetic Resonance Imaging by Scott A. Huettel, Allen W. Song, and Gregory McCarthy.			
Electronic References, Websites		1. MRI Questions • A free online resource offering interactive quizzes, explanations, and diagrams to help students understand MRI concepts and principles. • Website (https://mriquestions.com/) 2. Radiology Masterclass • Offers free and paid modules on radiology, including MRI, with a focus on anatomy and clinical applications. • Website (https://www.radiologymasterclass.co.uk/) 3. Khan Academy Medicine • Features free videos on medical imaging techniques, including MRI physics and clinical applications. • Website (https://www.khanacademy.org/science/health-and-medicine) 4. MRI Safety by Frank G. Shellock • A comprehensive resource on MRI safety, including detailed information on contraindications, magnetic field effects, and safe practices. • Website (http://www.mrisafety.com/)			

Course description Professional Ethics

1. Course Name:	
Professional Ethics	
2. Course Code:	
RT406 –PRE	
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)	
30hrs./ units2	
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	1. Understanding ethical principles and legal regulations in healthcare professions. 2. Developing ethical decision-making skills in clinical situations. 3. Enhancing professional behavior and responsibility towards patients and society. 4. Understanding medical confidentiality and protecting patient rights based on ethical standards. 5. Recognizing research ethics and its role in advancing healthcare profession.
9. Teaching and Learning Strategies	
Strategy	Interactive lectures to enhance understanding through discussions and open-ended questions. Case study analysis to gain experience in solving ethical dilemmas. Problem-based learning to develop critical thinking and decision-making skills. Self-directed and research-based learning through literature review and academic sources. Simulation and practical training to apply ethical behavior in real-life scenarios

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-2	4	Understand the concept of ethics, its sources, and significance	Unit 1: Ethics 1. Definition and origin of ethics. 2. General rules of ethics. 3. Sources of ethics. 4. Ethical values. 5. Importance of ethics for individuals and society.	Interactive lectures, group discussions	Quiz, participation assessment
3	2	Comprehend the definition and importance of work and its behaviors	Unit 2: Work and Profession 1. Definition and significance of work. 2. Work behaviors. 3. Definition of a profession. 4. Differences between work, profession, and craft. 5. Standards that should underlie a profession.	Lectures, case studies	Oral questions, written assessment
4	2	Analyze professional ethics and their benefits	Unit 3: Professional Ethics 1. Definition of professional ethics. 2. Positive outcomes of adhering to professional ethics. 3. Characteristics of work ethics. 4. Attributes of professional ethics. 5. Steps to achieve an acceptable level of professional ethics.	Lecture, case analysis	Case study analysis
5-6	4	Recognize fundamental values in professional ethics	Unit 4: Values and Professional Ethics 1. Integrity. 2. Honesty. 3. Advising. 4. Justice. 5. Good interpersonal relations. 6. Mastery of work.	Discussions, workshops	Group project, performance assessment

7-8	4	Identify patterns of unethical behavior	Unit 5: Patterns of Unethical Behavior in the Profession 1. Unethical administrative behavior. 2. Definition of administrative corruption and its types. 3. Bribery: its definition and types. 4. Fraud: its definition and nature in work.	Lectures, case studies	Written evaluation, short quiz
9-10	4	Application Means and Methods of Establishing Ethical Values	Unit 6: Means and Methods of Establishing Professional Ethics Values 1. Methods of Establishing Professional Ethics. 2. Levels of Building and Establishing Professional Ethics. 3. Considerations in Formulating the Professional Ethics Charter. 4. How to Promote Ethical Behavior in the Workplace According to Kreitner and Kinicki	Workshops, discussions	Report submission, group evaluation
11-12	4	-Understanding the Ethics of Medical Professions -Recognizing The Importance of Medical Confidentiality and Patient Data Protection	Unit 9: Ethics of Practicing Medical Professions 1. Characteristics and Traits of a Medical Technician. 2. Duties of the Medical Technician Towards the Profession, the Patient, and Society. 3. Patient Rights: ○ Justice and Equality. ○ Maintaining Patient Information Confidentiality. ○ Respecting Patient Privacy.	Interactive Lectures, Discussions, Case Studies	Group Assessment, Short Quiz

13	2	Behavioral Aspects of Handling Medical Devices and Equipment	Unit 9: Ethics of Practicing Medical Professions 4. The Medical Technician's Relationship with Society and Responsibility Towards the Environment and Public Safety - Adhering to fundamental professional rules to prevent the spread of epidemics and diseases. - Playing a role in raising health awareness and promoting disease prevention methods	Interactive Lectures, Discussions, Case Studies	Group Assessment, Short Quiz
14	2	Avoiding Misconduct in the Workplace	Unit 9 : Ethics of Practicing Medical Professions 5. Professional Relationships – The Medical Technician's Relationship with Colleagues in the Healthcare Institution - Respecting colleagues. - Cooperating with colleagues. - Avoiding criticism in front of patients. - Accuracy and honesty in performance evaluation	Interactive Lectures, Discussions, Case Studies	Group Assessment, Short Quiz
15	2	Teaching students how to guide the patient through imaging to best view diseases for the lecture.	Unit Nine: Ethics of Practicing Medical Professions 6. Ethics and Scientific Research: - Ethics of conducting medical experiments. - The Helsinki Declaration on Medical Research Ethics. - Ethics of writing medical research. - Ethics of teaching and learning using patients	Interactive Lectures, Discussions, Case Studies	Group Assessment, Short Quiz

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	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	1. Ethics of Health Professions – Written by a group of experts in medical ethics. 2. Introduction to Medical Profession Ethics – Written by Dr. Mohammed Abdulrahman. 3. Medical Law and Professional Ethics – Written by Dr. Ahmed Hassan. 4. Principles of Professional Ethics.
Main references (sources)	• Beauchamp, T. & Childress, J. (2019). <i>Principles of Biomedical Ethics</i>. Oxford University Press. • Pellegrino, E. & Thomasma, D. (1993). <i>The Virtues in Medical Practice</i>. Oxford University Press. • Jonsen, A., Siegler, M., & Winslade, W. (2015). <i>Clinical Ethics: A Practical Approach to Ethical Decisions in Clinical Medicine</i>. McGraw-Hill Education.
Recommended books and references (scientific journals, reports...)	1. Scientific journals • <i>Journal of Medical Ethics</i> • <i>The Hastings Center Report</i> • <i>American Journal of Bioethics</i> 2. Reports • <i>World Health Organization reports on medical ethics.</i> • <i>Guidelines on health professions ethics issued by health authorities.</i>
Electronic References, Websites	• www.who.int (WHO) • www.wma.net (WMA) • National Center for Biotechnology Information (NCBI) – www.ncbi.nlm.nih.gov • The Hastings Center for Bioethics Research – www.thehastingscenter.org