Republic of Yemen

Ministry of Education & Higher Research

Council of Academic Accreditation & Quality Assurance of

Higher Education (CAQA)

21 septamber University of Medical and Applied Science

Faculty of Applied Medical Science

Department of Medical Radiology and Imaging Technology

Program of Radiologic Technology and Medical Imaging

Course Specification of

Clinical Practice IV

Course Code. (____)

2024

Prepared by:	Reviewed by:	Head of the Department:	Quality Unit:	Dean:
	Dr. -----	Dr. Awadh Al-Kubati	Dr. Mohammed Al-shamahi	Dr. Abdulsalam Dalaq

I. General Information:

1.	**Course Title:**	Clinical Practice IV				
2.	**Course Code:**					
3.	**Credit Hours:**	**Credit Hours**	**Theory Contact Hours**		**Practical Contact Hours**	
			Lecture	**Tutorial/ Seminar**	**Lab**	**Clinical**
		4	--	--	--	12
4.	**Level/ Semester at which this Course is offered:**	4^{th} Level / 1^{st} Semester				
5.	**Pre –Requisite (if any):**	Clinical Practice I,II, III				
6.	**Co –Requisite (if any):**	None				
7.	**Program (s) in which the Course is Offered:**	Bachelor of Radiologic Technology and Medical Imaging				
8.	**Language of Teaching the Course:**	English				
9.	**Location of Teaching the Course:**	Faculty of Applied Medical Science				
10.	**Prepared by:**					
11.	**Date and Number of Approval by Council:**					

II. Course Description:

Clinical Practice IV is the final clinical placement in the Radiologic Technology program, designed to provide students with an opportunity to integrate and apply the skills and knowledge they have acquired throughout their education. This course focuses on developing independent clinical judgment, enhancing technical competence, and preparing students for professional practice. Students will have the chance to work with a variety of advanced imaging modalities such as CT, MRI, fluoroscopy, and interventional radiology, performing procedures with minimal supervision. Additionally, they will be exposed to multidisciplinary teams and experience diverse patient populations, further refining their communication and teamwork skills. The course also emphasizes quality assurance, radiation safety, and adherence to legal and ethical standards in clinical practice.

III. Course Intended Learning Outcomes (CILOs) : Upon successful completion of the course, students will be able to:		Referenced PILOs		
A. Knowledge and Understanding:		**I, P or M/A**		
a1	Demonstrate comprehensive knowledge of advanced imaging techniques and their clinical applications.	**A**	**A2**	Explanation of the principles and procedures of medical imaging acquisitions, medical imaging techniques, and Radiological Technology Sciences, including advanced imaging modalities.
a2	Understand and apply radiation safety protocols and infection control measures in diverse clinical settings.	**A**	**A3**	Exhibit professional characteristics required by the radiologic technology profession, including adherence to safety and infection control protocols.
B. Intellectual Skills:				
b1	Evaluate clinical situations and select the most appropriate imaging procedures.	**M**	**B1**	Assess the radiation exposure times and intensity of exposure to guarantee imaging technique accuracy while adapting to patient needs and clinical complexities.
b2	Synthesize information from various sources to make informed clinical decisions.	**M**	**B3**	Analyze and evaluate evidence-based information needed in medical imaging practice.
C. Professional and Practical kills:				
c1	Perform diagnostic imaging procedures independently in a variety of settings.	**M**	**C2**	Apply technical skills in using medical imaging devices, tools, and materials in radiological technology practice.
c2	Demonstrate leadership in clinical situations, managing both equipment and patient care.	**M**	**C1**	Execute quality management system and standard procedures in radiological technology practice.
D. Transferable Skills:				

d1	Effectively communicate with patients, healthcare providers, and the radiology team.	**A**	**D1**	Communicate effectively with clinicians, patients, and support staff.
d2	Recognize the need to critical thinking and problem-solving skills to handle complex clinical cases.	**A**	**D3**	Recognize the need to obtain further education in the pursuit of life-long learning, enhancing problem-solving and critical-thinking abilities.

I= Introduced, P=Practiced or M/A= Mastered/Advanced

(A) Alignment of Course Intended Learning Outcomes (Knowledge and Understanding) to Teaching Strategies and Assessment Methods:

	Course Intended Learning Outcomes	Teaching Strategies	Assessment Strategies
a1	Demonstrate comprehensive knowledge of advanced imaging techniques and their clinical applications.	▪ Advanced clinical exposure to specialized imaging modalities and techniques.	▪ Clinical evaluations, practical exams.
a2	Understand and apply radiation safety protocols and infection control measures in diverse clinical settings.	▪ Focused training on radiation safety, infection control, and patient management.	▪ Written exams, practical evaluations.

(B) Alignment of Course Intended Learning Outcomes (Intellectual Skills) to Teaching Strategies and Assessment Methods:

	Course Intended Learning Outcomes	Teaching Strategies	Assessment Strategies
b1	Evaluate clinical situations and select the most appropriate imaging procedures.	▪ Case-based learning and real-time clinical practice for decision-making.	▪ Observation, supervisor feedback.
b2	Synthesize information from various sources to make informed clinical decisions.	▪ Synthesis of clinical scenarios through patient evaluations and teamwork.	▪ Clinical case reports, practical assessments.

(C) Alignment of Course Intended Learning Outcomes (Professional and Practical Skills) to Teaching Strategies and Assessment Methods:

Course Intended Learning Outcomes	Teaching Strategies	Assessment Strategies

c1	Perform diagnostic imaging procedures independently in a variety of settings.	▪ Independent execution of imaging procedures under minimal supervision.	▪ Clinical evaluations, practical exams.
c2	Demonstrate leadership in clinical situations, managing both equipment and patient care.	▪ Supervised leadership roles in clinical teams and complex patient management.	▪ Clinical performance assessments.

(D) Alignment of Course Intended Learning Outcomes (Transferable Skills) to Teaching Strategies and Assessment Methods:

Course Intended Learning Outcomes		Teaching Strategies	Assessment Strategies
d1	Effectively communicate with patients, healthcare providers, and the radiology team.	▪ Training on effective communication and teamwork within multidisciplinary settings.	▪ Supervisor feedback.
d2	Apply critical thinking and problem-solving skills to handle complex clinical cases.	▪ Problem-solving tasks and decision-making in high-pressure clinical environments.	▪ Written reflections, clinical assessments.

IV. Course Contents:

A. Theoretical Aspect:

No.	Title	Sup-title	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1	None	–			
2		–			
Number of Weeks /and Units Per Semester					

B. Practical Aspect (Clinical):

No.	Title	Sup-title	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1	**Advanced Imaging Techniques in Clinical Practice**	– CT, MRI, Fluoroscopy, Interventional Radiology	1	12	a1, b1, c1
2	**Radiation Protection in Advanced Imaging**	– Radiation dosimetry, safety protocols, shielding techniques	1	12	a2, b1
3	**Imaging in Special Populations (Pediatrics, Geriatrics)**	– Positioning, protocol adaptation, patient care	1	12	a1, c1, d1
4	**Patient Management and Care in High-Risk Situations**	– ICU patients, emergency room imaging, sedation protocols	1	12	c2, d1
5	**Quality Assurance in Radiologic Imaging**	– Equipment maintenance, performance evaluation, image quality	2	12	b2, c1
6	**Ethical and Legal Issues in Radiology Practice**	– Patient confidentiality, informed consent, legal responsibilities	1	12	a2, d2
7	**Advanced Fluoroscopy and Interventional Techniques**	– Imaging protocols, patient care, procedural assistance	2	12	c1, a1
8	**Clinical Imaging Workflow Management**	– Scheduling, patient preparation, team coordination	2	12	d1, c2
9	**Complex Case Management in Radiologic Imaging**	– Multidisciplinary team involvement, imaging for diagnosis and therapy	2	12	b1, c1
10	**Future Trends in Radiologic Technology**	– New technologies, emerging imaging modalities	2	12	a1, b2
16	**Final Practical Exam**	– All topics	1	12	a1, a2, b1, b2, c1, c2, d1, d2
Number of Weeks /and Units Per Semester			**16**		

C. Tutorial Aspect (if any):

No.	Tutorial	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1	None			
2				
3				
Number of Weeks /and Units Per Semester				

VII. Teaching Strategies:

- Clinical Placement,
- Case Studies and Discussions
- Supervised Clinical Practice
- Leadership Development
- Reflective Practice

VII. Assessment Methods:

- Clinical Evaluations
- Practical Exams
- Loog book
- Instructor Feedback
- Case Study Reports

VII. Assignments:

No.	Assignments	Week Due	Mark	Aligned CILOs (symbols)
1				
2				
Total			10	

VIII. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	**Clinical Evaluation**	Ongoing	20	20%	c1, a1, b2
2	**Reflection Journal**	7	20	20%	d2, d1
3	**Final Practical Exam**	16	50	50%	b1, c2
4	**Case Study Report**	10	10	10%	b2, c1
Total			**100**	**100 %**	

IX. Learning Resources:

1- Required Textbook(s) (maximum two):

1- Stewart C. Bushong, 2020, Radiologic Science for Technologists Physics, Biology, and Protection, 12th Edition, Elsevier
2- James Johnston, 2024, Essentials of Radiographic Physics and Imaging, Elsevier.

2- Essential References:

1- Arlene M. Adler, Richard R. Carlton, Kori L. Stewart, 2022, Introduction to Radiologic & Imaging Sciences & Patient Care, 8th Edition, Elsevier.
2- Catherine Westbrook, John Talbot John Wiley & Sons, Oct 22, 2018, MRI in Practice, 5th Edition, Wiley-Blackwell.

3- Electronic Materials and Web Sites etc.:

Electronic Materials and Websites

- Radiology Society of North America (RSNA) Resources
- American College of Radiology (ACR) guidelines
- www.rsna.org
- www.asrt.org

X. Course Policies: (Based on the Uniform Students' By law (2007)

1	**Class Attendance:** Class Attendance is mandatory. A student is considered absent and shall be banned from taking the final exam if his/her absence exceeds 25% of total classes.
2	**Tardiness:** A student will be considered late if he/she is not in class after 10 minutes of the start time of class.
4	**Assignments & Projects:** Assignments and projects must be submitted on time. Students who delay their assignments or projects shall lose the mark allocated for the same.

5	**Cheating:** Cheating is an act of fraud that results in the cancelation of the student's exam or assignment. If it takes place in a final exam, the penalties stipulated for in the Uniform Students' Bylaw (2007) shall apply.
6	**Forgery and Impersonation:** Forgery/Impersonation is an act of fraud that results in the cancelation of the student's exam, assignment or project. If it takes place in a final exam, the penalties stipulated for in the Uniform Students' Bylaw (2007) shall apply**.**
7	**Other policies:** The University official regulations in force will be strictly observed and students shall comply with all rules and regulations of the examination set by the Department, Faculty and University Administration.
3	**Exam Attendance/Punctuality:** No student shall be allowed to the exam hall after 30 minutes of the start time, and shall not leave the hall before half of the exam time has passed.

Faculty of Applied Medical Science

Department of Medical Radiology and Imaging Technology

Program of Radiologic Technology and Medical Imaging

Course Plan (Syllabus) of

Clinical Practice IV

Course Code. .....

I. Information about Faculty Member Responsible for the Course:								
Name of Faculty Member:		**Office Hours**						
Location& Telephone No.:	-----							
E-mail:	--@--.--	SAT	SUN	MON	TUE	WED	THU	

2024/2025

Prepared by:	Reviewed by:	Head of the Department:	Quality Unit:	Dean:
	Dr. -----	Dr. Awadh Al-Kubati	Dr. Mohammed Al-shamahi	Dr. Abdulsalam Dalaq

I. General Information:

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			Lecture	**Tutorial/ Seminar**	**Lab**	**Clinical**
		4	--	--	--	12
15.	**Level/ Semester at which this Course is offered:**	4th Level / 1st Semester				
16.	**Pre –Requisite (if any):**	Clinical Practice I,II, III				
17.	**Co –Requisite (if any):**	None				
18.	**Program (s) in which the Course is Offered:**	Bachelor of Radiologic Technology and Medical Imaging				
19.	**Language of Teaching the Course:**	English				
20.	**Location of Teaching the Course:**	Faculty of Applied Medical Science				
21.	**Prepared by:**					
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III. Course Intended Learning Outcomes (CILOs) :

Upon successful completion of the course, students will be able to:

	A. Knowledge and Understanding:
a1	Demonstrate comprehensive knowledge of advanced imaging techniques and their clinical applications.

a2	Understand and apply radiation safety protocols and infection control measures in diverse clinical settings.
	B. Intellectual Skills:
b1	Evaluate clinical situations and select the most appropriate imaging procedures.
b2	Synthesize information from various sources to make informed clinical decisions.
	C. Professional and Practical kills:
c1	Perform diagnostic imaging procedures independently in a variety of settings.
c2	Demonstrate leadership in clinical situations, managing both equipment and patient care.
	D. Transferable Skills:
d1	Effectively communicate with patients, healthcare providers, and the radiology team.
d2	Apply critical thinking and problem-solving skills to handle complex clinical cases.

IV. Course Contents:

A. Theoretical Aspect:

No.	Title	Sup-title	Number of Weeks	Contact Hours
1	**None**	–		
2		–		
Number of Weeks /and Units Per Semester				

B. Practical Aspect (Clinical):

No.	Title	Sup-title	Number of Weeks	Contact Hours
1	**Advanced Imaging Techniques in Clinical Practice**	– CT, MRI, Fluoroscopy, Interventional Radiology	1	12

No.	Title	Sup-title	Number of Weeks	Contact Hours
2	**Radiation Protection in Advanced Imaging**	– Radiation dosimetry, safety protocols, shielding techniques	1	12
3	**Imaging in Special Populations (Pediatrics, Geriatrics)**	– Positioning, protocol adaptation, patient care	1	12
4	**Patient Management and Care in High-Risk Situations**	– ICU patients, emergency room imaging, sedation protocols	1	12
5	**Quality Assurance in Radiologic Imaging**	– Equipment maintenance, performance evaluation, image quality	2	12
6	**Ethical and Legal Issues in Radiology Practice**	– Patient confidentiality, informed consent, legal responsibilities	1	12
7	**Advanced Fluoroscopy and Interventional Techniques**	– Imaging protocols, patient care, procedural assistance	2	12
8	**Clinical Imaging Workflow Management**	– Scheduling, patient preparation, team coordination	2	12
9	**Complex Case Management in Radiologic Imaging**	– Multidisciplinary team involvement, imaging for diagnosis and therapy	2	12
10	**Future Trends in Radiologic Technology**	– New technologies, emerging imaging modalities	2	12
16	**Final Practical Exam**	– All topics	1	12
Number of Weeks /and Units Per Semester			**16**	

C. Tutorial Aspect (if any):

No.	Tutorial	Number of Weeks	Contact Hours
1	**None**		
2			
Number of Weeks /and Units Per Semester			

VII. Teaching Strategies:

- Clinical Placement,
- Case Studies and Discussions
- Supervised Clinical Practice
- Leadership Development
- Reflective Practice

VII. Assessment Methods:

- Clinical Evaluations
- Practical Exams
- Loog book
- Instructor Feedback
- Case Study Reports

VII. Assignments:

No.	Assignments	Week Due	Mark
1			
2			
Total			**10**

VIII. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark
1	**Clinical Evaluation**	Ongoing	20
2	**Reflection Journal**	7	20
3	**Final Practical Exam**	16	50
4	**Case Study Report**	10	10
Total			**100**

IX. Learning Resources:

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