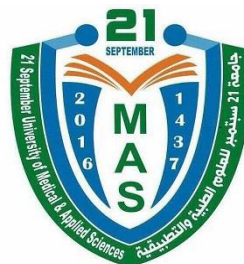


Republic of Yemen
Ministry of Education & Higher Research
Council of Academic Accreditation & Quality Assurance of
Higher Education (CAQA)



**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 v

Course Code. (____)

2024



T4: This Template is Developed and Approved by CAQA-Yemen, 2023

Prepared by:

Reviewed by:

Dr. -----

Head of the Department:

Dr. Awadh Al-Kubati

Quality Unit:

Dr. Mohammed
Al-shamahi

Dean:

Dr. Abdulsalam
Dalaq

I. General Information:

1.	Course Title:	Clinical Practice V				
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 / 2 nd Semester				
5.	Pre –Requisite (if any):	Clinical Practice III&IV				
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 V focuses on advanced clinical applications within hospital environments, where students gain hands-on experience in specialized radiologic techniques and patient care. Students will develop their technical, intellectual, and leadership skills while practicing independently under minimal supervision. The course emphasizes adherence to ethical standards, radiation safety, and effective communication within multidisciplinary teams. Real-life case-based learning and reflective practices further enhance decision-making and problem-solving skills.

III. Course Intended Learning Outcomes (CILOs):

Referenced PILOs

Prepared by:

Reviewed by:

Dr. -----

Head of the Department:

Dr. Awadh Al-Kubati

Quality Unit:

Dr. Mohammed
Al-shamahi

Dean:

Dr. Abdulsalam
Dalaq

Upon successful completion of the course, students will be able to:				
A. Knowledge and Understanding:		I, P or M/A		
a1	Identify and explain the technical specifications and operational principles of advanced radiologic imaging equipment.	A	A2	Explanation of the principles and procedures of medical imaging acquisitions, medical imaging techniques, and Radiological Technology Sciences, including advanced imaging modalities.
a2	Describe the integration of advanced imaging techniques in the diagnosis and management of complex medical conditions.	A	A3	Exhibit professional characteristics required by the radiologic technology profession, including adherence to safety and infection control protocols.
B. Intellectual Skills:				
b1	Analyze patient conditions to determine the most suitable imaging modalities and protocols.	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	Critically evaluate imaging results to support accurate and timely clinical decisions.	M	B3	Analyze and evaluate evidence-based information needed in medical imaging practice.
C. Professional and Practical skills:				
c1	Execute advanced imaging procedures with precision, ensuring high-quality diagnostic outputs.	M	C2	Apply technical skills in using medical imaging devices, tools, and materials in radiological technology practice.
c2	Develop and implement quality control measures to optimize imaging performance and patient safety.	M	C1	Execute quality management system and standard procedures in radiological technology practice.
D. Transferable Skills:				

d1	Demonstrate proficiency in adapting to rapidly evolving clinical environments and technologies.	A	D1	Communicate effectively with clinicians, patients, and support staff.
d2	Effectively collaborate with multidisciplinary teams to enhance patient care and imaging outcomes.	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	Identify and explain the technical specifications and operational principles of advanced radiologic imaging equipment.	Advanced clinical exposure to specialized imaging modalities and techniques	Clinical evaluations, practical exams	
a2	Describe the integration of advanced imaging techniques in the diagnosis and management of complex medical conditions.	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	Analyze patient conditions to determine the most suitable imaging modalities and protocols.	Case-based learning and real-time clinical practice for decision-making	Observation, supervisor feedback	
b2	Critically evaluate imaging results to support accurate and timely 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	Execute advanced imaging procedures with precision, ensuring high-quality diagnostic outputs.	Independent execution of imaging procedures under minimal supervision	Clinical evaluations, practical exams
c2	Develop and implement quality control measures to optimize imaging performance and patient safety.	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	Demonstrate proficiency in adapting to rapidly evolving clinical environments and technologies.	Training on effective communication and teamwork within multidisciplinary settings	Supervisor feedback
d2	Effectively collaborate with multidisciplinary teams to enhance patient care and imaging outcomes.	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		—			
3		—			
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 CT Imaging	– Protocol optimization, artifact management, contrast enhancement techniques	1	12	a1, c1
2	Advanced MRI Imaging	– Functional imaging, diffusion-weighted imaging, MR angiography	2	12	a1, c1
3	Radiation Safety	– Shielding techniques, radiation dosimetry, safety audits	3	12	a2, c1
4	Interventional Radiology	– Angioplasty procedures, biopsy techniques, patient care during interventions	4	12	a1, c1, b1
5	Imaging for Special Populations	– Pediatric imaging, geriatric imaging, bariatric patient positioning	5	12	a1, c1, d1
6	Emergency Radiology	– Trauma imaging, ICU imaging protocols, emergency room workflow	6	12	a1, b1, d1
7	Fluoroscopy Applications	– Real-time imaging techniques, gastrointestinal studies, patient safety during fluoroscopy	7	12	a1, a2, c1, b1, d1
8	Imaging Workflow Management	– Scheduling, equipment maintenance, team coordination	8	12	a1, c1, b2
9	Quality Control in Imaging	– Image quality assessment, equipment performance checks, corrective actions	9	12	a1, c2, d1
10	Multidisciplinary Team Collaboration	– Role in tumor boards, communication with surgeons, inter-departmental coordination	10	12	b1, c1, d2
11	Ethical Issues in Radiology	– Patient consent, confidentiality, legal responsibilities	11	12	b2, d1
12	Emerging Imaging Technologies	– AI in imaging, hybrid modalities, advanced software tools	12	12	a2, d1, d2
13	Complex Case Management	– Imaging for oncology, neuroimaging, vascular studies	13	12	a1, b2

No.	Title	Sup-title	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
14-15	Case study Presentation	– All Groups	14-15	12	a1, b2, c1
16	Final Exam	– All Covers Topics	16	12	a1, a2, c1, b1, b2, d1, d2
Number of Weeks /and Units Per Semester			16	32	

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
- Supervised Practice and Feedback
- Case-based Learning
- Leadership Role Assignments
- Reflective Practice

VII. Assessment Methods:

- Clinical Evaluation
- Reflection Journal
- Practical Exam
- Case Study Report

VII. Assignments:

Prepared by:

Reviewed by:

Dr. -----

Head of the Department:

Dr. Awadh Al-Kubati

Quality Unit:

Dr. Mohammed
Al-shamahi

Dean:

Dr. Abdulsalam
Dalaq

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, b1
2	Case Study Report	Week 7	10	10%	a1, a2, c1, b1
3	Reflection Journal	Week 8	20	20%	d2, d1
4	Final Practical Exam	Week 16	50	50%	a1, a2, c1, b2, d1
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 V 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

I. General Information:

12.	Course Title:	Clinical Practice V			
13.	Course Code:				
14.	Credit Hours:	Credit Hours	Theory Contact Hours		Practical Contact Hours
			Lecture	Tutorial/Seminar	Lab Clinical
		4	--	--	-- 12
15.	Level/ Semester at which this Course is offered:	4 th Level / 2 nd Semester			
16.	Pre –Requisite (if any):	Clinical Practice III&IV			
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:				
22.	Date and Number of Approval by Council:				

II. Course Description:

Clinical Practice V focuses on advanced clinical applications within hospital environments, where students gain hands-on experience in specialized radiologic techniques and patient care. The course includes exposure to 14 key practical topics, each subdivided into at least three subtopics, to ensure comprehensive learning. Students will develop their technical, intellectual, and leadership skills while practicing independently under minimal supervision. The course emphasizes adherence to ethical standards, radiation safety, and effective communication within multidisciplinary teams. Real-life case-based learning and reflective practices further enhance decision-making and problem-solving skills.

III. Course Intended Learning Outcomes (CILOs):

Prepared by:

Reviewed by:

Dr. -----

Head of the Department:

Dr. Awadh Al-Kubati

Quality Unit:

Dr. Mohammed
Al-shamahi

Dean:

Dr. Abdulsalam
Dalaq

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

A. Knowledge and Understanding:

a1

Identify and explain the technical specifications and operational principles of advanced radiologic imaging equipment.

A2

Describe the integration of advanced imaging techniques in the diagnosis and management of complex medical conditions.

B. Intellectual Skills:

b1

Analyze patient conditions to determine the most suitable imaging modalities and protocols.

B2

Critically evaluate imaging results to support accurate and timely clinical decisions.

C. Professional and Practical skills:

c1

Execute advanced imaging procedures with precision, ensuring high-quality diagnostic outputs.

C2

Develop and implement quality control measures to optimize imaging performance and patient safety.

D. Transferable Skills:

d1

Demonstrate proficiency in adapting to rapidly evolving clinical environments and technologies.

D2

Effectively collaborate with multidisciplinary teams to enhance patient care and imaging outcomes.

IV. Course Contents:

A. Theoretical Aspect:

No.	Title	Sup-title	Number of Weeks	Contact Hours
1	None	—		
2		—		
3		—		
Number of Weeks /and Units Per Semester				

Prepared by:

Reviewed by:

Dr. -----

Head of the Department:

Dr. Awadh Al-Kubati

Quality Unit:

Dr. Mohammed
Al-shamahi

Dean:

Dr. Abdulsalam
Dalaq

B. Practical Aspect (Clinical):

No.	Title	Sup-title	Number of Weeks	Contact Hours
1	Advanced CT Imaging	– Protocol optimization, artifact management, contrast enhancement techniques	1	12
2	Advanced MRI Imaging	– Functional imaging, diffusion-weighted imaging, MR angiography	2	12
3	Radiation Safety	– Shielding techniques, radiation dosimetry, safety audits	3	12
4	Interventional Radiology	– Angioplasty procedures, biopsy techniques, patient care during interventions	4	12
5	Imaging for Special Populations	– Pediatric imaging, geriatric imaging, bariatric patient positioning	5	12
6	Emergency Radiology	– Trauma imaging, ICU imaging protocols, emergency room workflow	6	12
7	Fluoroscopy Applications	– Real-time imaging techniques, gastrointestinal studies, patient safety during fluoroscopy	7	12
8	Imaging Workflow Management	– Scheduling, equipment maintenance, team coordination	8	12
9	Quality Control in Imaging	– Image quality assessment, equipment performance checks, corrective actions	9	12
10	Multidisciplinary Team Collaboration	– Role in tumor boards, communication with surgeons, inter-departmental coordination	10	12
11	Ethical Issues in Radiology	– Patient consent, confidentiality, legal responsibilities	11	12
12	Emerging Imaging Technologies	– AI in imaging, hybrid modalities, advanced software tools	12	12
13	Complex Case Management	– Imaging for oncology, neuroimaging, vascular studies	13	12
14-15	Case study Presentation	– All Groups	14-15	12
16	Final Exam	– All Covers Topics	16	12
Number of Weeks /and Units Per Semester			16	32

Prepared by:

Reviewed by:

Dr. -----

Head of the Department:

Dr. Awadh Al-Kubati

Quality Unit:

Dr. Mohammed
Al-shamahi

Dean:

Dr. Abdulsalam
Dalaq

C. Tutorial Aspect (if any):

No.	Tutorial	Number of Weeks	Contact Hours
1	None		
2			
3			
Number of Weeks /and Units Per Semester			

VII. Teaching Strategies:

- Clinical Placement
- Supervised Practice and Feedback
- Case-based Learning
- Leadership Role Assignments
- Reflective Practice

VII. Assessment Methods:

- Clinical Evaluation
- Reflection Journal
- Practical Exam
- Case Study Report

VII. Assignments:

No.	Assignments	Week Due	Mark
1			
2			
Total			10

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

Prepared by:

Reviewed by:

Dr. -----

Head of the Department:

Dr. Awadh Al-Kubati

Quality Unit:

Dr. Mohammed
Al-shamahi

Dean:

Dr. Abdulsalam
Dalaq

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Clinical Evaluation	Ongoing	20	20%
2	Case Study Report	Week 7	10	10%
3	Reflection Journal	Week 8	20	20%
4	Final Practical Exam	Week 16	50	50%
Total			100	100 %

IX. Learning Resources:

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

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

2- Essential References:

- 3- Arlene M. Adler, Richard R. Carlton, Kori L. Stewart, 2022, Introduction to Radiologic & Imaging Sciences & Patient Care, 8th Edition, Elsevier.
- 4- 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:

Prepared by:

Reviewed by:

Dr. -----

Head of the Department:

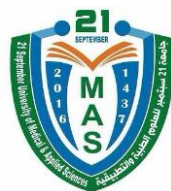
Dr. Awadh Al-Kubati

Quality Unit:

Dr. Mohammed
Al-shamahi

Dean:

Dr. Abdulsalam
Dalaq



	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.