

Course Specification (2025)

1. Basic Information

Course Title (according to the bylaw)	Interventional & Cardiovascular Radiation Techniques II			
Course Code (according to the bylaw)	TRMI 409			
Department/s participating in delivery of the course	Technology of Radiology and Medical Imaging			
Number of credit hours (according to the bylaw)	Theoretical	Practical	Other (specify)	Total
	2	2	-	3
Course Type	compulsory			
Academic level at which the course is taught	Level 4 – 2nd Semester			
Academic Program	Technology of Radiology and Medical Imaging			
Institute	High Technology Institute Of Applied Health Sciences			
Academy	Nile Delta for sciences			
Name of Course Coordinator	Dr Mohamed Auf Doctor of Biology Radiation Science Institute of High Technology Institute of Applied Health Science			
Course Specification Approval Date	Department Council No. 2, date: (21 – 09 – 2024)			
Course Specification Approval (Attach the decision/minutes				

of the department /committee/council)	
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2. Course Overview (Brief summary of scientific content)

Recognize most of the common interventional procedures with special stress on the whole-body vascular system (technique, contrast injection, anatomical evaluation and complications).

3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with program outcomes POs (NARS/ARS)

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Statement	Code	Statement
POs 1	Study human anatomy and pathology to understand the physiological basis of the images.	CLOs 1	Describe the vascular anatomy of major organs relevant to interventional radiology
		CLOs 2	Identify common vascular pathologies seen in IR procedures (e.g., PAD, aneurysms, malformations).
POs 2	Learn techniques for correctly positioning patients and various types of X-rays generating machines & equipment	CLOs 3	Apply proper patient positioning techniques for vascular access and endovascular interventions.
		CLOs 4	Explain equipment setup and C-arm positioning for angiographic imaging.
POs 3	Gain knowledge of the hazards of radioactive substances and radiation, and radiation protection.	CLOs 5	Discuss radiation protection strategies during fluoroscopy-guided interventional procedures.
		CLOs 6	Recognize contrast media risks and describe safety measures in contrast administration
POs 4	Troubleshoot technical errors and artifacts	CLOs 7	Identify common image artifacts and technical issues encountered

			during interventional procedures (e.g., motion, misregistration, equipment malfunction).
		CLOs 8	Suggest appropriate corrective actions to overcome technical difficulties during angiographic imaging.
POs 5	Adapt to new technologies and advancements in medical imaging	CLOs 8	Compare traditional and advanced interventional techniques (e.g., conventional embolization vs. image-guided micro-catheterization).
		CLOs 9	Evaluate recent innovations in IR such as drug-eluting stents, image fusion, or robotic catheter navigation.
POs 6	Operate and manage effectively the different medical imaging equipment and practice the professional fieldwork	CLOs 10	Operate angiography equipment and assist in performing basic interventional radiology procedures.
		CLOs 11	Follow clinical protocols and sterile techniques while working within the IR suite.
POs 7	Master both general and specialized radiographic procedures	CLOs 12	Assist in general IR procedures such as diagnostic angiography and vascular access.
		CLOs 13	Support specialized procedures like embolization, angioplasty, and endovascular stenting.

POs 8	Gain insight into specialized imaging processes including (CT scans, interventional procedures, magnetic resonance imaging .(MRI), ultrasound ...)	CLOs 14	Demonstrate understanding of workflow, imaging steps, and clinical applications of .interventional radiology
		CLOs 15	Differentiate between the roles of various imaging modalities during .image-guided interventions
	Communicate effectively & develop collaborative relationships .with all health members		
		CLOs	Communicate clearly and

POs 9		16	professionally with interventional radiologists, nurses, and fellow technologists during procedures
		CLOs 17	Participate in coordinated team activities before, during, and after interventional procedures to ensure patient safety
POs 10	Adjust to new technologies and methods	CLOs 18	Demonstrate flexibility in adapting to newly introduced IR techniques .or protocol modifications
		CLOs 19	Incorporate updated imaging tools and techniques into the interventional workflow with .minimal supervision

4. Teaching and Learning Methods

1. Interactive Lectures. Interactive Lectures.
2. Discussion and brain storming.
3. Asynchronous learning.
4. Case study /problem solving.
5. Self-Directed Learning (SDL).
6. Research and presentations, Assignment and reports.

Course Schedule

5. Methods of students' assessment

Number of the Week	Scientific content of the course (Course Topics)	Total Weekly Hours	Expected number of the Learning Hours			
			Theoretical teaching (lectures/discussion groups/)	Training (Practical/ Clinical/)	Self-learning (Tasks/ Assignments / Projects/ ...)	Other (to be determined)
1	Introduction and history	3	2	2	-	—
2	Whole body vascular system	3	2	2	-	-
3	Vascular access and procedures	3	2	2	1	-
4	Endovascular treatment of PAD	3	2	2	-	-
5	Acute embolization procedures	3	2	1	1	-
6	Midterm					
7	Role of IR technologist	3	2	2	1	-
8	Patient management	3	2	1	1	-
9	Angio	3	2	2	-	-
10	Contrast	3	2	1	1	-
11	IVC Filters	3	2	2	-	-
12	Venous Thromboembolism (1)	3	2	2	-	-
13	Venous Thromboembolism (2)	3	2	2	-	-
14	Aortic Dissection (1)	3	2	2	-	-
15	Aortic Dissection (2)	3	2	2	-	
16	Practical Exam					
17	Final written exam					
No .	Assessment Methods *		Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks	
1	Self-learning		8	10	6.6%	
2	Midterm		6	10	6.6%	
3	Final Practical/Clinical/... Exam		16	30	20%	
4	Final Written Exam		17	100	66.6%	

*** The methods mentioned are examples, the organization may add and/or delete**

6. Learning Resources and Supportive Facilities *

Learning resources (books, scientific references, etc.) *	The main (essential) reference for the course (must be written in full according to the scientific documentation method)	Kadarpa, K., & Machan, L. Handbook of interventional radiologic procedures
	Other References	-
	Electronic Sources (Links must be added)	Radiopaedia.org Knowledge bank: https://www.ekb.eg/ar
	Learning Platforms (Links must be added)	https://bislms.mans.edu.eg/
	Other (to be mentioned)	-
		Projector
Supportive facilities & equipment for teaching and learning *	Devices/Instruments	Whiteboard Markers
	Supplies	Model ابن الهيثم
	Electronic Programs	Practical Skills Labs
	Skill Labs/ Simulators	-----
	Virtual Labs	-----
	Other (to be mentioned)	-----

*** The list mentioned is an example, the institution may add and/or delete depending on the nature of the course**

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