

Course Specification

(2025)

1. Basic Information

Course Title (according to the bylaw)	Interventional & Cardiovascular Radiation Techniques I			
Course Code (according to the bylaw)	TRMI 403			
Department/s participating in delivery of the course	Technology of Radiology and Medical Imaging			
Number of credit hours of the course (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 – 1st Semester			
Academic Program	Technology of Radiology and Medical Imaging			
Institute	High Technology Institute of Applied Health Science			
Academy	Nile Delta for sciences			

Name of Course Coordinator	Prof.DR. Emad El-Shorbagy Prof. of Radiodiagnosis, National Liver Institute Menoufiya University, Egypt
Course Specification Approval Date	Department Council No. 2, date: (2024 - 09 - 21)
Course Specification Approval (Attach the decision/minutes of the department /committee/council)	

2. Course Overview (Brief summary of scientific content)

In this course the student will be able to 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 (ARS)

Program Outcomes (POs = sub-competences) (ARS) (according to the matrix in the program specs)		Course Learning Outcomes (CLOs) Upon completion of the course, the student will be able to:	
Cod e	Text	Code	Text
POs. 3.	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. 4.	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. 5.	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	CLO.7.	Identify common image artifacts and technical issues encountered during interventional procedures (e.g., motion, misregistration, equipment malfunction).
		CLO.8.	Suggest appropriate corrective actions to overcome technical difficulties during angiographic imaging.
POs. 6.	Adapt to new technologies and advancements in medical imaging	CLO.9.	Compare traditional and advanced interventional techniques (e.g., conventional embolization vs. image-guided micro-catheterization).
		CLOs.10.	Evaluate recent innovations in IR such as drug-eluting stents, image fusion, or robotic catheter navigation.
POs. 4.	Operate and manage effectively the different medical imaging equipment and practice the professional	CLOs.11.	Operate angiography equipment and assist in performing basic interventional radiology procedures.
		CLOs.1	Follow clinical protocols and sterile

	fieldwork	2.	techniques while working within the IR suite.
POs. 6.	Master both general and specialized radiographic procedures	CLOs.1 3.	Assist in general IR procedures such as diagnostic angiography and vascular access
		CLOs.1 4.	Support specialized procedures like embolization, angioplasty, and endovascular stenting
POs. 7.	Gain insight into specialized imaging processes including (CT scans, interventional procedures, magnetic resonance imaging (MRI), ultrasound ...).	CLOs.1 5.	Demonstrate understanding of workflow, imaging steps, and clinical applications of interventional radiology.
		CLOs.1 6.	Differentiate between the roles of various imaging modalities during image-guided interventions.
POs. 1.	Communicate effectively & develop collaborative relationships with all health members.	CLOs.1 7.	Communicate clearly and professionally with interventional radiologists, nurses, and fellow technologists during procedures.
		CLOs.1 8.	Participate in coordinated team activities before, during, and after interventional procedures to ensure patient safety.
POs. 4.	Adjust to new technologies and methods.	CLOs.1 9.	Demonstrate flexibility in adapting to newly introduced IR techniques or protocol modifications.
		CLOs.2 0.	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.

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	-	-
4	Endovascular treatment of PAD	3	2	1	1	-
5	Acute embolization procedures	3	2	1	1	-
6	Mid-Term Exam					
7	Role of IR technologist	3	2	2	-	-
8	Patient management	3	2	2	-	-
9	Angio	3	2	2	-	-
10	Contrast	3	2	1	1	-
11	IVC Filters	3	2	2	-	-
12	Venous Thromboembolism I	3	2	1	1	-

13	Venous Thromboembolism II	3	2	2	-	
14	Aortic Dissection I	3	2	1	1	-
15	Aortic Dissection II	3	2	2	-	-
16	Practical Exam					
17	Final Written Exam					

Course Schedule

5. Methods of students' assessment

No .	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Exam 1 written (Semester work)	-	-	-
2	Exam 2 (MIDTERM)	6	10	6.6%
3	Assignments	10	10	6.6%
4	Final Practical Exam	16	30	20%
5	Final Written Exam	17	100	66.6%
6	Final Oral Exam	-	-	-
7	Field training	-	-	-
8	Other (Mention)	-	-	-

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)	IR Playbook - Nicole A. Keefe
	Other References	Interventional Radiology for Medical Students - Hong Kuan Kok
	Electronic Sources (Links must be added)	Radiopaedia.org , the peer-reviewed collaborative radiology resource Knowledge bank: https://www.ekb.eg/ar
	Learning Platforms (Links must be added)	BISLMS: Log in to the site
	Other (to be mentioned)	-
Supportive facilities & equipment for teaching and learning *	Devices/Instruments	Computers, Boards and Projectors
	Supplies	-
	Electronic Programs	Ibn Al-Haytham Program
	Skill Labs/ Simulators	-
	Virtual Labs	-
	Other (to be mentioned)	Computers, Boards and Projectors

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

**Name and Signature
Course Coordinator**

Name and Signature

**Prof.DR. Emad El-
Shorbagy**

Program Coordinator

Dr/Amira Atef