



# Course Specification

— (Bachelor)

Course Title: **Medical Imaging Interpretation (2)**

Course Code: **374421-3**

Program: **Program of Bachelor in Radiological Sciences -374000-Level 6**

Department: **Department of Radiological Sciences**

College: **College of Applied Medical Sciences**

Institution: **Taif University**

Version: **3**

Last Revision Date: **4<sup>th</sup> September 2023**



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## A. General information about the course:

### 1. Course Identification

1. Credit hours: (3)

#### 2. Course type

- A.  University  College  Department  Track  Others
- B.  Required  Elective

3. Level/year at which this course is offered: (8<sup>th</sup> Level / 4<sup>th</sup> Year)

#### 4. Course general Description:

1. Describe the appearance of the pathology within the images. And allows the student to put an opinion in the image interpretation.
2. Discussion on which imaging method or modality will best demonstrate pathological condition.

#### 5. Pre-requirements for this course (if any):

- Ultrasound Imaging Techniques (374323-3).
- Medical Imaging Interpretation (1) (374327-2).
- Magnetic Resonance Imaging Techniques (374411-3).
- Nuclear Medicine Imaging Techniques (374412-3).

#### 6. Co-requirements for this course (if any):

None.

#### 7. Course Main Objective(s):

The course is designed to enable the student to:

1. Recognize the appearances of the different pathologies in the radiographic images.
2. Interpret the different radiographic images.
3. Know the differential diagnosis of pathologies in different radiological modalities.

### 2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	64	100%
2	E-learning	-	-
3	Hybrid <ul style="list-style-type: none"> <li>• Traditional classroom</li> <li>• E-learning</li> </ul>	-	-
4	Distance learning	-	-



### 3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	32
2.	Laboratory/Studio	32
3.	Field	-
4.	Tutorial	-
5.	Others (specify)	-
<b>Total</b>		<b>64</b>

### B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of PLOs aligned with course	Teaching Strategies	Assessment Methods
<b>1.0</b>	<b>Knowledge and understanding</b>			
1.1	Interpret medical terms for pathological conditions and diseases.	K3	Lectures	<b>Direct method:</b> - Written exams (Quiz, Midterm and Final)
<b>2.0</b>	<b>Skills</b>			
2.1	Choose appropriate radiographic positioning technique to deliver best demonstration for pathologies and maximize diagnostic evidence.	S1	Small group discussion	<b>Direct method:</b> - Written exams (Quiz, Midterm and Final) - Assignments -Final practical
2.2	Analyze radiographic appearance of common pathological conditions of body organs and human systems.	S2	Small group discussion	<b>Direct method:</b> - Written exams (Quiz, Midterm and Final) - Assignments -Final practical
<b>3.0</b>	<b>Values, autonomy, and responsibility</b>			
3.1	Evaluate the pathological condition and consult the radiologist further diagnostic measures.	V1	Self-learning	<b>Direct method:</b> -Assignment -Final practical



Code	Course Learning Outcomes	Code of PLOs aligned with course	Teaching Strategies	Assessment Methods
3.2	Develop professional ethical standards in keeping the patient data and diagnosis discreet.	V2	Self-learning	<b>Indirect method:</b> - Survey.

### C. Course Content

No	List of Topics	Contact Hours
1.	The urinary system (1): (Chapter 7, page No 224 of radiographic pathology for technologist) 1. Review normal anatomy of the urinary system.	4
2.	The urinary system (2): (Chapter 7, page No 228 of radiographic pathology for technologist) 1. Congenital and hereditary diseases: a. Number and size anomalies. b. Position anomalies of the kidney. c. Fusion anomalies of the kidney. d. Renal pelvis and ureter anomalies. e. Lower tract anomalies. f. Polycystic kidney disease. g. Medullary sponge kidney.	4
3.	The urinary system (3): (Chapter 7, page No 233 of radiographic pathology for technologist) Inflammatory diseases: a. Nephritis. b. Urinary tract infection. c. Pyelonephritis. d. Cystitis.	4
4.	The urinary system (4): (Chapter 7, page No 237 of radiographic pathology for technologist) Degenerative and metabolic diseases: a. Renal Stones. b. Hydronephrosis.	4
5.	The urinary system (5): (Chapter 7, page No 239 of radiographic pathology for technologist) Neoplastic diseases: a. Renal cyst. b. Renal carcinoma. c. Wilms' Tumor. d. Renal pelvis carcinoma. e. Bladder carcinoma.	4
6.	Female Reproductive System (1): (Chapter 10, page No 315 of radiographic pathology for technologist)	4





	<p>1. Inflammatory Diseases: a. Pelvic inflammatory diseases.</p> <p>2. Masses and Neoplastic diseases: a. Uterine fibroids. b. Ovarian cystic masses. c. Uterine cancer. d. Cystadenocarcinoma.</p>	
7.	<p>Female Reproductive System (2): (Chapter 10, page No 317 of radiographic pathology for technologist)</p> <p>Breast Disorders: a. Mastitis. b. Breast cancer.</p>	4
8.	<p>Female Reproductive System (3): (Chapter 10, page No 319 of radiographic pathology for technologist)</p> <p>Disorders during pregnancy: a. Ectopic pregnancy. b. Hydatidiform mole.</p>	4
9.	<p>Male Reproductive System: (Chapter 10, page No 328 of radiographic pathology for technologist)</p> <p>Neoplastic disease. a. Prostatic hyperplasia. b. Carcinoma of the prostate.</p>	4
10.	<p>Cardiovascular system (1): (Chapter 4, page No 112 of radiographic pathology for technologist)</p> <p>1. Congenital and hereditary diseases: a. Patent ductus arteriosus. b. Coarctation of the aorta. c. Septal defects. d. Tetralogy of Fallot. e. Valvular diseases.</p> <p>2. Congestive Heart failure: a. Left-side failure. b. Right-side failure.</p>	4
11.	<p>Cardiovascular system (2): (Chapter 4, page No 121 of radiographic pathology for technologist)</p> <p>1. Degenerative diseases: a. Atherosclerosis. b. Coronary artery disease. c. Myocardial infarction. d. Ane.</p>	4
12.	<p>Haemopoietic system: (Chapter 9, page No 298 of radiographic pathology for technologist)</p> <p>1. Acquired Immune Deficiency Syndrome. 2. Neoplastic diseases: a. Multiple myeloma. b. Leukemia.</p>	4





	c. Non-Hodgkin's lymphoma. d. Hodgkin's disease.	
13.	Central Nervous system (1): (Chapter 8, page No 261 of radiographic pathology for technologist) Congenital and hereditary diseases: a. Meningomyelocele. b. Hydrocephalus.	4
14.	Central Nervous system (2): (Chapter 8, page No 266 of radiographic pathology for technologist) Inflammatory diseases: a. Meningitis. b. Encephalitis. c. Brain abscess.	4
15.	Central Nervous system (3): (Chapter 8, page No 268 of radiographic pathology for technologist) 1. Degenerative Diseases: 2. Degenerative risk diseases and herniated: a. Cervical spondylosis. b. Multiple sclerosis.	4
16.	Central Nervous system (4): (Chapter 8, page No 270 of radiographic pathology for technologist) 1. Vascular diseases: a. Cerebrovascular accidents. b. Ischemic strokes. c. Hemorrhagic strokes. 2. Neoplastic diseases: a. Gliomas. b. Medulloblastoma. c. Meningioma. d. Pituitary adenoma.	4
<b>Total</b>		<b>64</b>

#### D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quiz	5 <sup>th</sup>	10
2.	Midterm exam.	8 <sup>th</sup>	30
3.	Assignment (essay).	11 <sup>th</sup>	10
4.	Final practical evaluation	17 <sup>th</sup>	10
4.	Final exam.	19 <sup>th</sup>	40

\*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

#### E. Learning Resources and Facilities

##### 1. References and Learning Resources





<b>Essential References</b>	Radiographic Pathology for Technologists. Nina Kowalczyk 6th Edition Mosby ISBN: 978-0-323-08902-9
<b>Supportive References</b>	1. Workbook for Comprehensive Radiographic Pathology. Eisenberg RL, Johnson NM. 4th ed. Mosby ISBN: 0323042198 2. Radiographic Pathology: Workbook. Linn-Watson T. 2nd edition WB Saunders ISBN: 0721641695.
<b>Electronic Materials</b>	1. <a href="http://www.arrt.org">http://www.arrt.org</a> 2. <a href="https://www.asrt.org/asrt.htm">https://www.asrt.org/asrt.htm</a> 3. <a href="http://www.auntminnie.com">http://www.auntminnie.com</a> 4. <a href="http://www.air.asn.au">http://www.air.asn.au</a> 5. <a href="http://user.shikoku.ne.jp/tobrains/exam/Angio/Angio-e.html">http://user.shikoku.ne.jp/tobrains/exam/Angio/Angio-e.html</a> 6. <a href="http://chorus.rad.mcw.edu/">http://chorus.rad.mcw.edu/</a> 7. <a href="http://www.emory.edu/X-RAYS/Sprawls/">http://www.emory.edu/X-RAYS/Sprawls/</a>
<b>Other Learning Materials</b>	<b>Video.</b>

## 2. Required Facilities and equipment

Items	Resources
<b>facilities</b> (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	<b>Classroom with 30 seats.</b>
<b>Technology equipment</b> (projector, smart board, software)	<b>Blackboard, Projector and Smart Board.</b>
<b>Other equipment</b> (depending on the nature of the specialty)	<b>None.</b>

## F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	<b>Program Leaders</b>	<b>Direct</b>
Effectiveness of Students assessment	<b>Students, Peer reviewer</b>	<b>Direct/ Indirect</b>
Quality of learning resources	<b>Student, Faculty</b>	<b>Indirect</b>
The extent to which CLOs have been achieved	<b>Faculty</b>	<b>Direct</b>
Teaching and interaction with students	<b>Students</b>	<b>Indirect</b>

**Assessors** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

**Assessment Methods** (Direct, Indirect)







## G. Specification Approval

COUNCIL /COMMITTEE	DEPARTMENT COUNCIL
REFERENCE NO.	11 <sup>TH</sup>
DATE	24 <sup>TH</sup> MAY 2022





# Course Specification

— (Bachelor)

Course Title: **Neuroscience and Neuroimaging**

Course Code: **374420-2**

Program: **Program of Bachelor in Radiological Sciences -374000-Level 6**

Department: **Department of Radiological Sciences**

College: **College of Applied Medical Sciences**

Institution: **Taif University**

Version: **3**

Last Revision Date: **4<sup>th</sup> September 2023**



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## A. General information about the course:

### 1. Course Identification

1. Credit hours: (2)

#### 2. Course type

- A.  University  College  Department  Track  Others
- B.  Required  Elective

3. Level/year at which this course is offered: (8<sup>th</sup>/4)

#### 4. Course general Description:

The course is designed to provide the student with basic knowledge of clinical neuroscience and neuroimaging.

#### 5. Pre-requirements for this course (if any):

- Magnetic Resonance Imaging Techniques (374411-3).
- Nuclear Medicine Imaging Techniques (374412-3).

#### 6. Co-requirements for this course (if any):

None

#### 7. Course Main Objective(s):

By the end of the course the student should:

- a) Be familiar with the neuroanatomy and neurophysiology.
- b) Be familiar with the neuroimaging techniques.
- c) Be familiar with the uses of neuroimaging in neuroscience.

### 2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	32	100%
2	E-learning	-	-
3	Hybrid <ul style="list-style-type: none"> <li>• Traditional classroom</li> <li>• E-learning</li> </ul>	-	-
4	Distance learning	-	-



### 3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	32
2.	Laboratory/Studio	-
3.	Field	-
4.	Tutorial	-
5.	Others (specify)	-
<b>Total</b>		<b>32</b>

### B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of PLOs aligned with course	Teaching Strategies	Assessment Methods
<b>1.0</b>	<b>Knowledge and understanding</b>			
1.1	Demonstrate advanced knowledge of neuroanatomy and neurophysiology.	<b>K1</b>	Lectures	<b>Direct method</b> -Written exams (Quiz, Midterm exam and Final exam). - Presentation.
1.2	Demonstrate advanced knowledge of neuroimaging methods and their applications to the investigation of human brain functions.	<b>K2</b>	Lectures	
<b>2.0</b>	<b>Skills</b>			
2.1	Choose the appropriate neuroimaging method according to the patient condition.	<b>S1</b>	Lectures	<b>Direct method</b> -Written exams (Quiz, Midterm exam and Final exam). - Presentation.
<b>3.0</b>	<b>Values, autonomy, and responsibility</b>			
3.1				



## C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to Neuroscience	2
2.	Functional Neuroanatomy (1)	2
3.	Functional Neuroanatomy (2)	2
4.	Synaptic transmission	2
5.	Electrical signaling.	2
6.	Neuroimaging techniques -EEG.	2
7.	Neuroimaging techniques – fMRI (1)	2
8.	Neuroimaging techniques – fMRI (2)	2
9.	Neuroimaging techniques – PET	2
10.	Neuroimaging techniques – MRS	2
11.	Neuroimaging techniques – Diffusion Imaging	2
12.	Topics in Neuroscience-1	2
13.	Topics in Neuroscience-2.	2
14.	Topics in Neuroscience-3.	2
15.	Topics in Neuroscience-4.	2
16.	Topics in Neuroscience-5.	2
<b>Total</b>		<b>32</b>

## D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Activity (Quiz)	4 <sup>th</sup>	10
2.	Mid-term Exam	8 <sup>th</sup>	30
3.	Presentation	15 <sup>th</sup>	10
4.	Final Exam	18 <sup>th</sup>	50

\*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

## E. Learning Resources and Facilities

### 1. References and Learning Resources

<b>Essential References</b>	Clinical Neuroscience: An Illustrated Colour Text Paul Johns 1st Edition Churchill Livingstone ISBN: 978-0-443-10321-6
<b>Supportive References</b>	Handbook of Functional MRI Data Analysis





	Russell A. Poldrack, Jeanette A. Mumford, Thomas E. Nichols June 2011 Cambridge University Press ISBN: 9780511895029  EEG – fMRI Physiological Basis, Technique, and Applications Christoph Mulert, Louis Lemieux. 1st Edition Springer ISBN: 978-3-540-87919-0
<b>Electronic Materials</b>	<a href="https://mrimaster.com">https://mrimaster.com</a>
<b>Other Learning Materials</b>	Blackboard

## 2. Required Facilities and equipment

Items	Resources
<b>facilities</b> (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom with 30 seats.
<b>Technology equipment</b> (projector, smart board, software)	Data show.
<b>Other equipment</b> (depending on the nature of the specialty)	Video.

## F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Program Leaders	Direct
Effectiveness of Students assessment	Faculty	Direct
Quality of learning resources	Student, Faculty	Indirect
The extent to which CLOs have been achieved	Faculty	Direct
Other	-	-

**Assessors** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

**Assessment Methods** (Direct, Indirect)

## G. Specification Approval

<b>COUNCIL /COMMITTEE</b>	DEPARTMENT COUNCIL
<b>REFERENCE NO.</b>	11 <sup>TH</sup>
<b>DATE</b>	24 <sup>TH</sup> MAY 2022





# Course Specification

— (Bachelor)

**Course Title:** Quality management in Radiology

**Course Code:** 374424-3

**Program:** Program of Bachelor in Radiological Sciences -374000-Level 6

**Department:** Department of Radiological Sciences

**College:** College of Applied Medical Sciences

**Institution:** Taif University

**Version:** 3

**Last Revision Date:** 4<sup>th</sup> September 2023





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## A. General information about the course:

### 1. Course Identification

1. Credit hours: (3)

#### 2. Course type

- A.  University  College  Department  Track  Others
- B.  Required  Elective

3. Level/year at which this course is offered: (8<sup>th</sup> Level / 4<sup>th</sup> Year)

#### 4. Course general Description:

This course is designed to provide the student with technical and administrative processes to ensure that radiographic equipment meet the manufacture standards.

#### 5. Pre-requirements for this course (if any):

- Magnetic Resonance Imaging Techniques (374411-3).
- Nuclear Medicine Imaging Techniques (374412-3).
- Advanced Clinical Practice (1) (374415-4).

#### 6. Co-requirements for this course (if any):

None

#### 7. Course Main Objective(s):

By the end of the course the student should be able to:

- Differentiate between quality assurance/management/control concepts.
- Understand the benefits of quality assurance program.
- Understand the role of radiographer in quality assurance program.
- Know various types of testing equipment.
- Describe different quality Assurance/management/control concepts.
- Understand quality control tests for different imaging modalities.
- Evaluate different radiological machines equipment.

### 2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	48	100%
2	E-learning	-	-
3	Hybrid <ul style="list-style-type: none"> <li>• Traditional classroom</li> <li>• E-learning</li> </ul>	-	-
4	Distance learning	-	-





### 3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	48
2.	Laboratory/Studio	-
3.	Field	-
4.	Tutorial	-
5.	Others (specify)	-
<b>Total</b>		<b>48</b>

### B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of PLOs aligned with course	Teaching Strategies	Assessment Methods
<b>1.0</b>	<b>Knowledge and understanding</b>			
1.1	Define the concepts of quality management, quality assurance and quality control.	<b>K1</b>	Lectures	Direct: - Written exams (Midterm and final).
1.2	Explain quality management tools and procedures.	<b>K2</b>	Lectures	Direct: - Written exams (Midterm and final).
<b>2.0</b>	<b>Skills</b>			
2.1	Apply various quality control tests for different image modalities.	<b>S5</b>	Small group discussion	Indirect: - Surveys.
<b>3.0</b>	<b>Values, autonomy, and responsibility</b>			
-	-	-	-	-

### C. Course Content

No	List of Topics	Contact Hours
1.	1. Quality Management Definitions: a. Quality improvement management (QIM). b. Quality assurance (QA).	<b>3</b>



	c. Quality control (QC). Chapter 2 pages (17-31)	
2.	1. Benefits of quality programmers. 2. Elements of quality assurance. 3. Recommendations of CDRH to establish a QA program. Chapter 1 pages (1-9)	3
3.	1. Quality control: a. Levels. b. Types. c. Parts. 2. Responsibilities of quality control in radiology department. Chapter 1 pages (10-15)	3
4.	1. Performing QC tests in: a. Conventional radiography. b. CR equipment. c. DR equipment. d. kVp accuracy. Chapter 5 pages (64-70) Chapter 7 pages (85-113)	3
5.	2. Performing QC tests in: e. Exposure linearity. f. Reciprocity. g. filtration check. h. Beam restriction system test. Chapter 5 pages (64-70) Chapter 7 pages (85-113)	3
6.	3. Performing QC tests in: i. Focal spot size test. j. Resolution check. k. Radiation reproducibility test. l. Timer accuracy. Chapter 5 pages (64-70) Chapter 7 pages (85-113)	3
7.	1. Quality control in fluoroscopic equipment: a. High contrast check. b. Low contrast check. Chapter 8 pages (115-130)	3
8.	2. Quality control in fluoroscopic equipment: c. Image resolution check. d. Dose check. Chapter 8 pages (115-130)	3
9.	1. Quality control in Computerized Tomography: a. Phantom in CT as QC tools. b. Concepts of CT dose indices. c. Contrast resolution test. d. Contrast scale and CT number test.	3



Chapter 12 pages (231-241)		
10.	2. Quality control in Computerized Tomography: e. Slice width check. f. Image noise and uniformity check. g. Artifacts reduction. Chapter 12 pages (231-241)	3
11.	1. QC in Ultrasound Imaging: a. Tissue mimicking phantom. b. Noise check. c. Measurement's accuracy and dynamic range test. d. Grey scale test. Chapter 14 pages (256-270)	3
12.	2. QC in Ultrasound Imaging: e. Probe sensitivity and output test. f. Continuous and pulse doppler test. g. Artifact appearance and methods of reductions. Chapter 14 pages (256-270)	3
13.	1. QC in Magnetic Resonance Imaging (MRI): a. Coils sensitivity. b. Efficiency check. c. Signal to noise ratio concept. d. Modulation transfer function (MTF) as checking tool. Chapter 13 pages (243-254)	3
14.	2. QC in Magnetic Resonance Imaging (MRI): e. Slice thickness. f. Position test. g. Artifacts reduction. Chapter 13 pages (243-254)	3
15.	1. QC in Nuclear Medicine (NM) imaging: a. Sensitivity uniformity of detectors. b. Spatial energy. Chapter 15 pages (272-293)	3
16.	2. QC in Nuclear Medicine (NM) imaging: c. Collimator. d. Intrinsic resolution. Chapter 15 pages (272-293)	3
<b>Total</b>		<b>48</b>



## D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quiz.	6 <sup>th</sup>	10%
2.	Mid-term Examination.	8 <sup>th</sup>	30%
3.	Assignment (Long essays).	16 <sup>th</sup>	10%
4.	Final Examination.	19 <sup>th</sup>	50%

\*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

## E. Learning Resources and Facilities

### 1. References and Learning Resources

<b>Essential References</b>	Quality Management in Imaging Science Jeffry Papp 6th Edition Elsevier 2018 ISBN:9780323512374 eBook ISBN: 9780323635844
<b>Supportive References</b>	Textbook of Diagnostic Imaging Carl E. Ravin and Charles Edgar Putman 2 <sup>nd</sup> Edition Saunders 1994 ISBN: 0721636985 (vol. 1) ISBN: 0721636993 (vol. 2)
<b>Electronic Materials</b>	Saudi Digital Library (SDL) on Taif University website (through the Electronic Services portal - academic systems services).
<b>Other Learning Materials</b>	<a href="https://scholar.google.com">https://scholar.google.com</a> <a href="https://pubmed.ncbi.nlm.nih.gov">https://pubmed.ncbi.nlm.nih.gov</a> <a href="http://www.radiologyinfo.org/glossary">http://www.radiologyinfo.org/glossary</a> <a href="http://www.radsciresearch.org">http://www.radsciresearch.org</a>

### 2. Required Facilities and equipment



Items	Resources
<b>facilities</b> (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom with 30 seats.
<b>Technology equipment</b> (projector, smart board, software)	Projector. Smart Board.
<b>Other equipment</b> (depending on the nature of the specialty)	None.

## F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Program Leaders	Direct
Effectiveness of Students assessment	Students, Peer review	Direct, Indirect
Quality of learning resources	Student, Faculty	Indirect
The extent to which CLOs have been achieved	Faculty	Direct
Other Teaching and interaction with students	Students	Indirect

**Assessors** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

**Assessment Methods** (Direct, Indirect)

## G. Specification Approval

<b>COUNCIL /COMMITTEE</b>	<b>DEPARTMENT COUNCIL</b>
<b>REFERENCE NO.</b>	<b>11<sup>TH</sup></b>
<b>DATE</b>	<b>24<sup>TH</sup> MAY 2022</b>





# Course Specification

— (Bachelor)

Course Title: **Research Project**

Course Code: **374426-6**

Program: **Program of Bachelor in Radiological Sciences -374000-Level 6**

Department: **Department of Radiological Sciences**

College: **College of Applied Medical Sciences**

Institution: **Taif University**

Version: **3**

Last Revision Date: **4<sup>th</sup> September 2023**





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## A. General information about the course:

### 1. Course Identification

1. Credit hours: ( 6 )

#### 2. Course type

A.  University  College  Department  Track  Others  
B.  Required  Elective

3. Level/year at which this course is offered: (8<sup>th</sup> Level / 4<sup>th</sup> year)

#### 4. Course general Description:

This course is designed to provide the students with the research skills directed to problem solving in the field of radiological sciences. The students are supposed to investigate a radiology related research topic, collect and analyze data, and write a research thesis with appropriate documentation.

#### 5. Pre-requirements for this course (if any):

- Research Methodology (374324-2).
- Advanced Clinical Practice (1) (374415-4).

#### 6. Co-requirements for this course (if any):

None

#### 7. Course Main Objective(s):

The module will equip the student with experience in research skills and report the findings in a scientific way.

### 2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	-	-
2	E-learning	-	-
3	Hybrid <ul style="list-style-type: none"> <li>• Traditional classroom</li> <li>• E-learning</li> </ul>	-	-
4	Distance learning	-	-
5	Others	96	100%



### 3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	-
2.	Laboratory/Studio	-
3.	Field	-
4.	Tutorial	-
5.	Others (Research skills and scientific writing)	96
<b>Total</b>		<b>96</b>

### B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of PLOs aligned with course	Teaching Strategies	Assessment Methods
<b>1.0</b>	<b>Knowledge and understanding</b>			
1.1	-	-	-	-
<b>2.0</b>	<b>Skills</b>			
2.1	Develop appropriate methodologies to address the research question or creative objective	<b>S2</b>	Problem solving Problem-based learning	<b>Direct method</b> Discussion <b>Indirect method</b>
2.2	Select appropriate analytical frameworks to guide and inform empirical studies.	<b>S3</b>	Problem solving Problem-based learning	Survey
<b>3.0</b>	<b>Values, autonomy, and responsibility</b>			
3.1	Commit to ethical standards and professional behavior in research conducting	<b>V1</b>	Collaborative Project-based learning	<b>Direct method</b> Presentation Graduation project
3.2	Work collaboratively with other researchers.	<b>V2</b>	Collaborative Project-based learning	<b>Indirect method</b> Survey

### C. Course Content

No	List of Topics	Contact Hours
1.	Revise the concept of research.	6





2.	Suggesting the project title.	6
3.	Writing and presenting the project proposal.	6
4.	Approving the project proposal.	6
5.	Writing literature review.	6
6.	Writing literature review and methods	6
7.	Data collection.	6
8.	Data collection.	6
9.	Applying statistical data analysis.	6
10.	Report on results of data analysis.	6
11.	Writing the discussion.	6
12.	Writing the discussion.	6
13.	Writing the conclusion and recommendation and references.	6
14.	Revising the project before submission.	6
15.	Submitting the project.	6
16.	Oral presentation and discussion.	6
<b>Total</b>		<b>96</b>

## D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Submitting the introduction and methods to the supervisor.	7 <sup>th</sup>	10%
2.	Completing the data collection.	9 <sup>th</sup>	5%
3.	Completing the data analysis	10 <sup>th</sup>	5%
4.	Writing the results.	11 <sup>th</sup>	10%
5.	Writing the discussion and conclusion.	14 <sup>th</sup>	10%
6.	Submitting the final project to the external committee.	15 <sup>th</sup>	20%
7.	Presenting the project.	16 <sup>th</sup>	40%

\*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

## E. Learning Resources and Facilities

### 1. References and Learning Resources

#### Essential References

According to the selected topic related to radiology and medical imaging.



<b>Supportive References</b>	According to the selected topic related to radiology and medical imaging.
<b>Electronic Materials</b>	Saudi Digital Library (SDL) on Taif University website (through the Electronic Services portal – academic systems services).
<b>Other Learning Materials</b>	-

## 2. Required Facilities and equipment

Items	Resources
<b>facilities</b> (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom.
<b>Technology equipment</b> (projector, smart board, software)	-
<b>Other equipment</b> (depending on the nature of the specialty)	-

## F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Program Leaders	Direct
Effectiveness of Students assessment	Students	Indirect
Quality of learning resources	Student, Faculty	Indirect
The extent to which CLOs have been achieved	Faculty	Direct
Other	-	-

**Assessors** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

**Assessment Methods** (Direct, Indirect)

## G. Specification Approval

<b>COUNCIL /COMMITTEE</b>	<b>DEPARTMENT COUNCIL</b>
<b>REFERENCE NO.</b>	<b>11<sup>TH</sup></b>
<b>DATE</b>	<b>24<sup>TH</sup> MAY 2022</b>





# Field Experience Specification

Course Title: **Advanced Clinical Practice (2)**

Course Code: **374425-4**

Program: **Program of Bachelor in Radiological Sciences -374000-Level 6**

Department: **Department of Radiological Sciences**

College: **College of Applied Medical Sciences**

Institution: **Taif University**

Field Experience Version Number: **3**

Last Revision Date: **4<sup>th</sup> September 2023**



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## A. Field Experience Details:

1. Credit hours: (4).

2. Level/year at which Field Experience is offered: (8<sup>th</sup> Level / 4<sup>th</sup> Year).

3. Time allocated for Field Experience activities

(16) Weeks	Wednesday for girls Sunday for boys	(8) Hours
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4. Corequisite (or prerequisites if any) to join Field Experience

Advanced Clinical Practice (2) (374415-4).

5. Mode of delivery

In-person/onsite       hybrid (onsite/online)       Online

## B. Field Experience Course Learning Outcomes (CLOs), Training Activities and Assessment Methods

Code	Learning Outcomes	Aligned PLO Code	Training Activities	Assessment Methods	Assessment Responsibility
1.0	Knowledge and understanding				
1.1	--				
2.0	Skills				
2.1	Communicate effectively with patient during magnetic resonance imaging (MRI) and nuclear medicine (NM) procedures with or without contrast media in a skilled and safe way.	S4	Problem solving Problem-based learning Practical Training	Continuous Assessment. Logbook assessment Practical Exam OSPE	Department teaching staff. Field Supervisor. Students.
2.2	Choose appropriate techniques with proper care according to patient's condition.	S1	Problem solving Problem-based learning Practical Training	Continuous Assessment. Logbook assessment Practical Exam OSPE	Department teaching staff. Field Supervisor. Students.







Code	Learning Outcomes	Aligned PLO Code	Training Activities	Assessment Methods	Assessment Responsibility
2.3	assess images accurately with high quality for MRI and NM examinations.	S2	Problem solving Problem-based learning Practical Training	Continuous Assessment. Logbook assessment Practical Exam OSPE	Department teaching staff. Field Supervisor. Students.
2.4	Analyze informed decisions about clinical practice within the accepted departmental protocols.	S3	Problem solving Problem-based learning Practical Training	Indirect:- (survey)	Department teaching staff. Field Supervisor. Students.
2.5	Take part in operating MRI and NM machines properly.	S5	Problem-solving Problem-based learning Practical Training	Continuous Assessment. Logbook assessment Practical Exam OSPE	Department teaching staff. Field Supervisor. Students.
<b>3.0</b>	<b>Values, autonomy, and responsibility</b>				
3.1	Adapt the ethical profession as honesty, respect, patient care and infection control.	V1	Collaborative learning Self-learning	Presentation	Department teaching staff. Field Supervisor. Students.
3.2	Collaborate effectively with patients and health staff during basic radiation protection and safety measures	V2	Collaborative learning Self-learning	Presentation	Department teaching staff. Field Supervisor. Students.
...					

\*Assessment methods (i.e., practical test, field report, oral test, presentation, group project, essay, etc.).



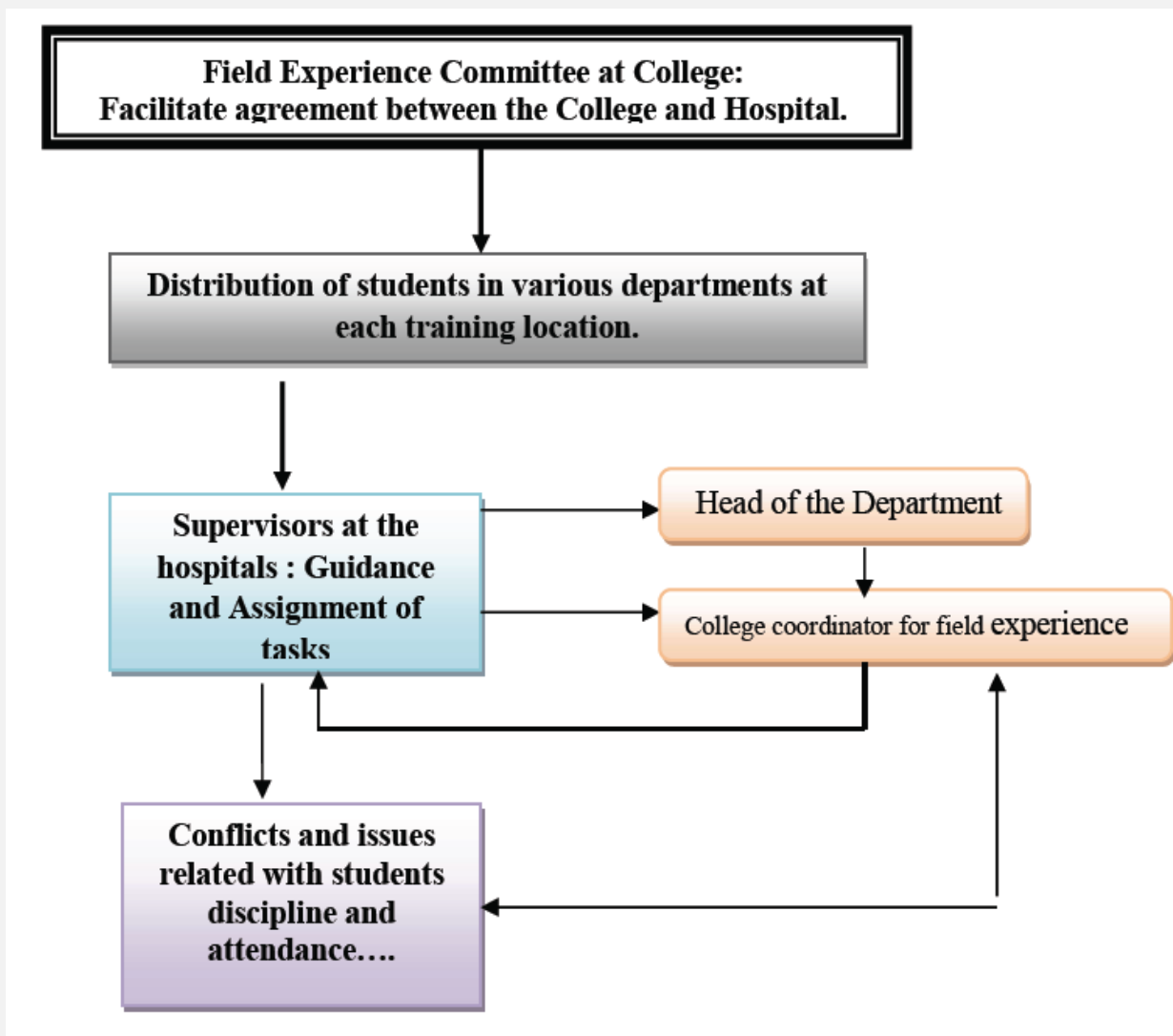


## C. Field Experience Administration

### 1. Field Experience Flowchart for Responsibility

Including units, departments, and committees responsible for field experience identifying by the interrelations.

- Confidential instructor evaluation questionnaire on completion of the course.
- Student interview.
- Student feedback report to be analyzed by the course instructor and submit the results to the department head.
- External evaluators.



## 2. Distribution of Responsibilities for Field Experience Activities

Activities	Department or College	Teaching Staff	Student	Training Organization	Field Supervisor
Selection of a field experience site	√	√		√	√
Selection of supervisory staff	√	√		√	√
Provision of the required equipment	√	√		√	√
Provision of learning resources	√	√			√
Ensuring the safety of the site	√	√		√	√
Commuting to and from the field experience site			√		
Provision of support and guidance		√		√	√
Implementation of training activities (duties, reports, projects ...)		√			√
Follow up on student training activities		√		√	√
Monitoring attendance and leave		√		√	√
Assessment of learning outcomes		√			√
Evaluating the quality of field experience	√	√	√	√	√
Others (specify)	-	-	-	-	-

## 3. Field Experience Location Requirements

Suggested Field Experience Locations	General Requirements*	Special Requirements**
King Abdul-Aziz Specialist Hospital.	Training letter.	None.
King Faisal Specialist Hospital.	Student ID. Medical Uniform.	None.
Al-Hada Military Hospital.	TLD. Proper appearance.	Training application Security check.

\*E.g. provides information technology, equipment, laboratories, halls, housing, learning sources, clinics ... etc.

\*\* E.g. Criteria of the institution offering the training or those related to the specialization, such as safety standards, dealing with patients in medical specialties ... etc.



#### 4. Decision-Making Procedures for Identifying Appropriate Locations for Field Experience

- Start with a meeting with the faculty teaching staff, discussing the main objectives of the trainee rounds and making some suggestions.
- Hospitals are chosen for capacity, availability of radiological modalities, and located within Taif city.
- Students are distributed according to the hospitals' capacity.

#### 5. Safety and Risk Management

Potential Risks	Safety Actions	Risk Management Procedures
Isolation of highly infected patients.	<ul style="list-style-type: none"> <li>- Avoid direct contact with the patient.</li> <li>- Avoid direct contact with contaminated areas (e.g. pressure ulcer).</li> <li>- Wear face mask, gloves, overhead and overshoes cover.</li> </ul>	<ul style="list-style-type: none"> <li>- Enforce student's knowledge in infection control.</li> </ul>
Radiation exposure.	<ul style="list-style-type: none"> <li>- Always keep in shielded environment or wear shielding garment.</li> <li>- Keep a safe distance from the radiation source.</li> <li>- Minimize the exposure time as low as possible.</li> <li>- Apply ALARA (as low as reasonably achievable) principle.</li> <li>- Monitor your radiation dose regularly.</li> </ul>	<ul style="list-style-type: none"> <li>- Enforce students' knowledge in radiation protection training.</li> <li>- Personal dosimeters.</li> </ul>





## D. Training Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching	Training Committee	Direct
The extent of achievement of course learning outcomes	Faculty	Direct
Quality of learning resources	Student, Faculty	Indirect
Course management and planning	Students	Indirect
Teaching and interaction with students	Students	Indirect
Effectiveness of Evaluation and exams	Students, peer review	Direct, Indirect
Safety	Teaching Staff, Field Supervisors	Direct
Training facilities/site	Students, Faculty	Direct, Indirect

**Evaluation areas** (e.g., Effectiveness of Training and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

**Evaluators** (Students, Supervisory Staff, Program Leaders, Peer Reviewer, Others (specify))

**Assessment Methods** (Direct, Indirect)

## E. Specification Approval Data

Council /Committee	DEPARTMENT COUNCIL
Reference No.	11 <sup>TH</sup>
Date	24 <sup>TH</sup> MAY 2022

