



## Course Specifications

<b>Course Title:</b>	<b>Computerized Tomography Physics and Instrumentation</b>
<b>Course Code:</b>	<b>374222-3</b>
<b>Program:</b>	<b>Bachelor in Radiological Sciences</b>
<b>Department:</b>	<b>Department of Radiological Sciences</b>
<b>College:</b>	<b>College of Applied Medical Sciences</b>
<b>Institution:</b>	<b>Taif University</b>

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## A. Course Identification

3
<b>1. Credit hours:</b>
<b>2. Course type</b>
a. University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
<b>3. Level/year at which this course is offered:</b> 6 <sup>th</sup> Level/2 <sup>nd</sup> Year
<b>4. Pre-requisites for this course (if any):</b> Radiation physics (374211-2).
<b>5. Co-requisites for this course (if any):</b> None.

### 1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100 %
2	Blended	-	-
3	E-learning	-	-
4	Distance learning	-	-
5	Other	-	-

### 2. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	30
3	Tutorial	-
4	Others (specify)	-
	<b>Total</b>	<b>60</b>

## B. Course Objectives and Learning Outcomes

<p><b>1. Course Description</b></p> <p>Course content is designed to impart understanding of evolution of computed tomography (CT), physical principles and instrumentation involved in computed tomography, the characteristics of X-radiation, data acquisition and manipulation, image reconstruction algorithms, such as filtered back-projection and transform, components of CT scanner; gantry assembly (patient aperture, rotating frame, X-ray tube, collimator, and detectors), Patient table, operator console, CT computer and workstations.</p>
<p><b>2. Course Main Objective</b></p> <p>This course aims to describe the physical principles of Computed Tomography scanner, recognize CT generations and the instrumentations, image artifacts and evaluate image quality. As well the students should perform CT image windowing (manipulation).</p>

### 3. Course Learning Outcomes

CLOs		Aligned PLOs
1	<b>Knowledge and understanding:</b>	
1.1	Explain the physical principles of Computed Tomography.	K1
1.2	Recognize Computed Tomography instrumentations.	K2
2	<b>Skills:</b>	
2.1	Explain different CT generations, CT components and image processing.	S2
2.2	Examine CT image artifacts, image quality and image reconstruction algorithms.	S5
3	<b>Values:</b>	
-	-	-

### C. Course Content

No	List of Topics (theoretical)	Contact Hours
1	<ol style="list-style-type: none"> <li>Historical Perspectives for CT scanner</li> <li>Conventional Tomography versus Computed Tomography.</li> <li>Computed Tomography versus MRI.</li> <li>Practical session.</li> </ol> Chapter: 1, Pages: 1-29 (Textbook-1).	6
2	<ol style="list-style-type: none"> <li>Computed Tomography Generations.</li> <li>Capabilities and limitations.</li> <li>Practical session.</li> </ol> Chapter: 4, Pages: 84-92 (Textbook-1).	6
3	<ol style="list-style-type: none"> <li>Components of CT scanner (1):               <ol style="list-style-type: none"> <li>Gantry assembly.</li> </ol> </li> <li>Practical session.</li> </ol> Chapter: 7, Pages: 151-160 (Textbook-1).	6
4	<ol style="list-style-type: none"> <li>Components of CT scanner (2):               <ol style="list-style-type: none"> <li>Detector assembly.</li> <li>Detector electronics.</li> <li>Patient couch.</li> <li>Image display system.</li> </ol> </li> <li>Practical session.</li> </ol> Chapter: 8, Pages: 160-168 (Textbook-1).	6
5	<ol style="list-style-type: none"> <li>Physical principles of CT.</li> <li>Steps of production CT images:               <ol style="list-style-type: none"> <li>Data acquisition.</li> <li>Image reconstruction.</li> <li>Image display (1).</li> <li>Manipulation.</li> <li>Storage.</li> <li>Communications.</li> <li>Recording.</li> </ol> </li> </ol>	6

	3. Practical session. Chapter: 4, Pages: 92-97 (Textbook-1).	
6	1. Physical principles of CT (2): a. Image Display (2). 2. Practical session. Chapter: 4, Pages: 97-103 (Textbook-1).	6
7	1. Image Manipulation and post processing technique: a. Image Reformation. b. Application of visualization tools. 2. Practical session. Chapter: 9, Pages: 188-200 (Textbook-1).	6
8	1. Image quality in CT. 2. Quality Parameters. 3. Practical session. Chapter: 9, Pages: 201-213 (Textbook-1).	6
9	1. CT artifacts. 2. Practical session. Chapter: 9, Pages: 213-218 (Textbook-1).	6
10	1. Radiation concepts and measuring dose in CT. 2. Practical session. Chapter: 10, Pages: 219-335 (Textbook-1).	6
<b>Total</b>		60

## D. Teaching and Assessment

### 1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
<b>1.0</b>	<b>Knowledge and understanding</b>		
1.1	Explain the physical principles of Computed Tomography.	Lecture	Written exams
1.2	Recognize Computed Tomography instrumentations.	Lecture	Written exam Assignment
<b>2.0</b>	<b>Skills:</b>		
2.1	Explain different CT generations, CT components and image processing.	Lecture Small group discussion	Written exam Practical exam
2.2	Examine CT image artifacts, image quality and image reconstruction algorithms.	Lecture Small group discussion	Written exam Practical exam
<b>3.0</b>	<b>Values:</b>		
-	-	-	-

## 2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Mid-term written exam	5 <sup>th</sup>	30%
2	Presentation and/or assignment	8 <sup>th</sup>	10%
4	Final practical exam	10 <sup>th</sup>	20%
3	Final written exam	11 <sup>th</sup> - 12 <sup>th</sup>	40%

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

## E. Student Academic Counseling and Support

### Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

Faculty members are available for individual consultation. They usually dedicate 12 hours weekly for office hours and students are encouraged to visit them for help. Appointments can also be made in person with the faculty through email or phone. Faculty provide a range of academic and course management advice. Each student has an academic adviser who offers personal, academic, psychological, and professional counseling, as well as group counseling to support the academic, behavioral, emotional, psychological, and social growth of students.

## F. Learning Resources and Facilities

### 1. Learning Resources

<b>Required Textbooks</b>	Computed tomography: physical principles, clinical applications, and quality control. Euclid Seeram. 3rd edition. Publisher: Elsevier ISBN: 978-1-4160-2895-6 Published Date: 2009
<b>Essential References Materials</b>	Computed Tomography for Technologist: a comprehensive text Lois E. Romans. 1st Edition Publisher: Wolters Kluwer Health Lippincott Williams & Wilkins ISBN: 978-0-7817-7751-3 Published Date: 2011
<b>Electronic Materials</b>	<ul style="list-style-type: none"> <li>- Link for the course at Blackboard Learn Portal on Taif university webpage (<a href="https://lms.tu.edu.sa/webapps/login/">https://lms.tu.edu.sa/webapps/login/</a>)</li> <li>- Saudi Digital Library (SDL) on Taif University website (through the Electronic Services portal - academic systems services).</li> </ul>
<b>Other Learning Materials</b>	None.

## 2. Facilities Required

Item	Resources
<b>Accommodation</b> (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classroom. Laboratory.
<b>Technology Resources</b> (AV, data show, Smart Board, software, etc.)	Data show. Internet access.
<b>Other Resources</b> (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	CT simulator machine.

## G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching	Program Leaders	Direct
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

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

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

**Assessment Methods** (Direct, Indirect)

## H. Specification Approval Data

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





## Course Specifications

<b>Course Title:</b>	<b>Diagnostic Radiography Instrumentation</b>
<b>Course Code:</b>	<b>374226-3</b>
<b>Program:</b>	<b>Bachelor in Radiological Sciences</b>
<b>Department:</b>	<b>Department of Radiological Sciences</b>
<b>College:</b>	<b>College of Applied Medical Sciences</b>
<b>Institution:</b>	<b>Taif University</b>



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<b>B. Course Objectives and Learning Outcomes</b> .....	<b>3</b>
1. Course Description .....	3
2. Course Main Objective.....	3
3. Course Learning Outcomes .....	3
<b>C. Course Content</b> .....	<b>4</b>
<b>D. Teaching and Assessment</b> .....	<b>5</b>
1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods .....	5
2. Assessment Tasks for Students .....	5
<b>E. Student Academic Counseling and Support</b> .....	<b>5</b>
<b>F. Learning Resources and Facilities</b> .....	<b>6</b>
1. Learning Resources .....	6
2. Facilities Required.....	6
<b>G. Course Quality Evaluation</b> .....	<b>6</b>
<b>H. Specification Approval Data</b> .....	<b>7</b>

## A. Course Identification

<b>1. Credit hours:</b>	<b>3</b>
<b>2. Course type</b>	
a.	University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b.	Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
<b>3. Level/year at which this course is offered:</b>	<b>6<sup>th</sup>Level/2<sup>nd</sup>Year</b>
<b>4. Pre-requisites for this course (if any):</b>	<b>Digital imaging and display 374217-2</b>
<b>5. Co-requisites for this course (if any):</b>	<b>None</b>

### 1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100%
2	Blended	-	-
3	E-learning	-	-
4	Distance learning	-	-
5	Other	-	-

### 2. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	30
3	Tutorial	0
4	Others (specify)	0
	<b>Total</b>	<b>60</b>

## B. Course Objectives and Learning Outcomes

<p><b>1. Course Description</b></p> <p>Theoretical and practical course designed to provide students with rich information about radiographic instrumentation in diagnostic department, as well as construction and functions of these equipment and their safe usage, plus instrumentation specifications.</p>
<p><b>2. Course Main Objective</b></p> <ul style="list-style-type: none"> <li>State radiographic equipment specifications and department requirements of instrumentations.</li> <li>Describe the basic X-ray components and electrical circuits.</li> <li>Explain fluoroscopic components.</li> </ul>

### 3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	<b>Knowledge and understanding</b>	
1.1	Define the basic X-ray machine components, accessories and electrical circuits.	K2
1.2	Recognize fluoroscopic and conventional instrumentation components.	K2
2	<b>Skills:</b>	

CLOs		Aligned PLOs
2.1	Contrast different connection of X-ray machines to main power supply.	S5
2.2	Differentiate instrumentation specifications, construction function and ancillary components.	S4
2.3	Operate medical X-ray and fluoroscopic apparatus properly.	S5
<b>3</b>	<b>Values:</b>	
3.1	Develop professionalism in working carefully and safely with different X-ray machines.	V1

### C. Course Content

No	List of Topics	Contact Hours
1	1. Electricity concepts. 2. Main power supply. 3. Practical of connection. Chapter one p 1-11	6
2	1. Switches. 2. Protective electrical devices. 3. Practical of devices. Chapter one p 1-11	6
3	1. Diagnostic X-ray machine types. 2. X-ray tube: a. Construction. b. Function. c. Types. 3. Practical session. Chapter two 11-18 plus chapter five page 56-68	6
4	1. X-ray generators: a. Construction. b. Function. c. Types. 2. Practical of transformers. Chapter four 44-55	6
5	1. Ancillary: a. Equipment. b. Timer. 2. Practical of devices. Chapter four 44-55	6
6	Fluoroscopic equipment. Chapter six 101-117	6
7	1. Digital fluoroscopy. 2. Practical discussion. Chapter six 101-117	6
8	Mobile and portable Radiographic Equipment. Chapter seven 118-129	6
9	Equipment for Dental Radiography. Chapter seven 118-129	6
10	Mammographic unit. Chapter nine 140-153	6
<b>Total</b>		<b>60</b>

## D. Teaching and Assessment

### 1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	<b>Knowledge and understanding:</b>		
1.1	Define the basic X-ray machine components, accessories and electrical circuits.	lecture	Direct method/written exam (mid, final exam and quiz) and assignment.
1.2	Recognize fluoroscopic and conventional instrumentation components.	lecture	Direct method/written exam (mid, final exam and quiz) Indirect method /survey
2.0	<b>Skills:</b>		
2.1	Contrast different connection of X-ray machines to main power supply.	Small group discussion	Discussion
2.2	Differentiate instrumentation specifications, construction function and ancillary components.	Problem based learning	Assignment
2.3	Operate medical X-ray and fluoroscopic apparatus properly.	Problem based learning	Practical report
3.0	<b>Values:</b>		
3.1	Develop professionalism in working carefully and safely with different X-ray machines.	Collaborative learning	Presentation

### 2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Mid-term Examination.	5 <sup>th</sup>	30 %
2	Activity (Quiz, assignment, discussion, practical report, and presentation).	8 <sup>th</sup>	30 %
3	Final Examination.	11 <sup>th</sup> - 12 <sup>th</sup>	40 %

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

## E. Student Academic Counseling and Support

### Arrangements for the availability of faculty and teaching staff for individual student consultations and academic advice:

Faculty members are available for individual consultation. They usually dedicate 12 hours weekly for office hours and students are encouraged to visit them for help. Appointments can also be made in person with the faculty through email or phone. Faculty provide a range of academic and course management advice. Each student has an academic adviser who offers personal, academic, psychological, and professional counseling, as well as group counseling to support the academic, behavioral, emotional, psychological, and social growth of students.

## F. Learning Resources and Facilities

### 1. Learning Resources

<b>Required Textbooks</b>	<ul style="list-style-type: none"> <li>Equipment for Diagnostic Radiography E. Forster 5<sup>th</sup> Edition 1998 ISBN 978-0-85200-928-4</li> </ul>
<b>Essential References Materials</b>	<ul style="list-style-type: none"> <li>Chesneys' Equipment for Student Radiographers P. H. Carter and A. M. Paterson 1994 4th Edition Wiley-Blackwell ISBN: 978-0-632-02724-8</li> </ul>
<b>Electronic Materials</b>	None.
<b>Other Learning Materials</b>	None.

### 2. Facilities Required

Item	Resources
<b>Accommodation</b> (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classroom with at least 30 seats
<b>Technology Resources</b> (AV, data show, Smart Board, software, etc.)	- Data show - Internet access
<b>Other Resources</b> (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None.

## G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching	Program Leaders	Direct
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

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

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

**Assessment Methods** (Direct, Indirect)

## H. Specification Approval Data

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





## Course Specifications

<b>Course Title:</b>	<b>General Radiographic Techniques and Radiographic Anatomy (2)</b>
<b>Course Code:</b>	<b>374313-4</b>
<b>Program:</b>	<b>Bachelor in Radiological Sciences</b>
<b>Department:</b>	<b>Department of Radiological Sciences</b>
<b>College:</b>	<b>College of Applied Medical Sciences</b>
<b>Institution:</b>	<b>Taif University</b>

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<b>A. Course Identification</b> .....	<b>3</b>
1. Mode of Instruction (mark all that apply) .....	3
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1. Course Description.....	3
2. Course Main Objective.....	3
3. Course Learning Outcomes .....	4
<b>C. Course Content</b> .....	<b>4</b>
<b>D. Teaching and Assessment</b> .....	<b>5</b>
1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods.....	5
2. Assessment Tasks for Students .....	6
<b>E. Student Academic Counseling and Support</b> .....	<b>6</b>
<b>F. Learning Resources and Facilities</b> .....	<b>6</b>
1. Learning Resources .....	6
2. Facilities Required.....	7
<b>G. Course Quality Evaluation</b> .....	<b>7</b>
<b>H. Specification Approval Data</b> .....	<b>7</b>



## A. Course Identification

<b>1. Credit hours:</b> 4
<b>2. Course type</b>
a. University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
<b>3. Level/year at which this course is offered:</b> 6 <sup>th</sup> Level/ 2 <sup>nd</sup> Year
<b>4. Pre-requisites for this course (if any):</b> General Radiographic Techniques and Radiographic Anatomy (1) (374221-4).
<b>5. Co-requisites for this course (if any):</b> None.

### 1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	7	100%
2	Blended	-	-
3	E-learning	-	-
4	Distance learning	-	-
5	Other	-	-

### 2. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	40
3	Tutorial	-
4	Others (specify)	-
	<b>Total</b>	<b>70</b>

## B. Course Objectives and Learning Outcomes

### 1. Course Description

The course is designed to provide the student with the knowledge base necessary to perform standard imaging procedures with certain terminologies and abbreviations for the cranium, chest (upper airway, heart and lungs) and abdominal viscera. The contents also provide the students with the skills to perform facial and dental radiography and mammography as well.

### 2. Course Main Objective

- Demonstrate routine radiographic procedures with standard terminologies and abbreviations of positioning and identify the basic and alternative radiographic examinations for the cranium, chest (upper airway, heart and lungs) and abdominal viscera, facial and dental radiography and mammography as well.
- State and project to identify the anatomical structures of cranium, chest (upper airway, heart and lungs) and abdominal viscera, facial and dental radiography and mammography.

### 3. Course Learning Outcomes

CLOs		Aligned PLOs
1	<b>Knowledge and understanding</b>	
1.1	Recall the routine radiographic examinations and radiographic anatomy for the skull, chest, abdomen, dental radiography, and mammography.	K1
1.2	Demonstrate the clinical indications, technical factors, standard terminologies, and abbreviations of positioning the basic, and special radiographic examinations for skull, chest, abdomen, dental radiography, and mammography.	K2
2	<b>Skills:</b>	
2.1	Apply routine and alternative radiographic examinations and how to read the medical requests properly.	S2
2.2	Choose the correct instructions to help in positioning the patient to obtain high quality images in-line with the clinical condition of the patient.	S1
2.3	Illustrate the normal radiographic anatomical structures for the skull, chest, abdomen, dental radiography and mammography.	S3
3	<b>Values:</b>	
3.1	Develop professionalism in working carefully and safely with conventional X-ray machines.	V1

### C. Course Content

No	List of Topics	Contact Hours
1	1. Chest Anatomy. 2. Radiographic Technique Considerations. Chapter 2 (pages 70-88) Textbook 1	7
2	1. Chest radiography. 2. Practical demonstration on X-ray machine. Chapter 2 (pages 92- 103) Textbook 1	7
3	1. Anatomy of the abdomen. 2. Positioning Considerations. Chapter 3 (pages 105- 109) Textbook 1	7
4	1. Abdomen radiography. 2. Practical demonstration on X-ray machine. Chapter 3 (pages 110- 126) Textbook 1	7
5	1. Cranium: a. Skull anatomy. b. Skull landmarks. c. Skull procedures. 2. Practical demonstration. Chapter 11 (pages 375- 390) Textbook 1	7
6	1. Facial bones radiography (1): a. Facial. b. Orbits.	7

	2. Practical demonstration. Chapter 11 (pages 391- 414) Textbook 1	
7	1. Facial bones radiography (2): a. Mandible-zygoma. b. PNS. 2. Practical demonstration. Chapter 11 (pages 315- 432) Textbook 1	7
8	1. Dental radiography (1): a. Intraoral radiography Section 10 (pages 280 -305) Textbook 2	7
9	1. Dental radiography (2): a. Extraoral radiography. Section 10 (pages 306 -328) Textbook 2	7
10	1. Mammography. Chapter 20 (pages 758 765) Textbook 1  Section 15 (pages 436 -363) Textbook 2	7
<b>Total</b>		70

## D. Teaching and Assessment

### 1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	<b>Knowledge and understanding</b>		
1.1	Recall the routine radiographic examinations and radiographic anatomy for the skull, chest, abdomen, dental radiography, and mammography.	Lectures	Exams and Assignment
1.2	Demonstrate the clinical indications, technical factors, standard terminologies, and abbreviations of positioning the basic, and special radiographic examinations for skull, chest, abdomen, dental radiography, and mammography.	Lectures	Exams and quizzes
2.0	<b>Skills:</b>		
2.1	Apply routine and alternative radiographic examinations and how to read the medical requests properly.	Case study	Case evaluation
2.2	Choose the correct instructions to help in positioning the patient to obtain high quality images in-line with the clinical condition of the patient.	lectures and Practical sessions	Practical exam

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.3	Illustrate the normal radiographic anatomical structures for the skull, chest, abdomen, dental radiography, and mammography.	Problem based learning	Exams and practical reports
3.0	<b>Values:</b>		
3.1	Develop professionalism in working carefully and safely with conventional X-ray machines.	Collaborative learning	Presentation

## 2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Quiz	3 <sup>rd</sup>	10 %
2	Midterm Exam	5 <sup>th</sup> – 6 <sup>th</sup>	20 %
3	Practical exam	10 <sup>th</sup>	20 %
4	Final Exam	11 <sup>th</sup> -12 <sup>th</sup>	50 %

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

## E. Student Academic Counseling and Support

### Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

Faculty members are available for individual consultation. They usually dedicate 12 hours weekly for office hours and students are encouraged to visit them for help. Appointments can also be made in person with the faculty through email or phone. Faculty provide a range of academic and course management advice. Each student has an academic adviser who offers personal, academic, psychological, and professional counseling, as well as group counseling to support the academic, behavioral, emotional, psychological and social growth of students.

## F. Learning Resources and Facilities

### 1. Learning Resources

<b>Required Textbooks</b>	1. Bontrager`s, Textbook for Radiographic Positioning & Related Anatomy John P. Lampignano, Leslie E. Kendrick, 9 <sup>th</sup> Edition Elsevier 2018 ISBN: 978-0-323-39966-1
<b>Essential References Materials</b>	2. CLARK`S Positioning in Radiography WITHLEY Taylor & Francis group 13 <sup>th</sup> Edition 2016 ISBN: 9781444122350

<b>Electronic Materials</b>	<ol style="list-style-type: none"> <li><a href="http://www.radiologyinfo.org/glossary/">http://www.radiologyinfo.org/glossary/</a></li> <li><a href="http://www.radsciresearch.org">http://www.radsciresearch.org</a></li> <li><a href="http://www.radiography.com/">http://www.radiography.com/</a></li> <li><a href="http://www.jrcert.org">http://www.jrcert.org</a></li> <li><a href="http://www.emory.edu/X-RAYS/Sprawls/">http://www.emory.edu/X-RAYS/Sprawls/</a></li> <li><a href="http://www.dimag.com/">http://www.dimag.com/</a></li> </ol>
<b>Other Learning Materials</b>	None.

## 2. Facilities Required

Item	Resources
<b>Accommodation</b> (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms, laboratories, demonstration rooms and labs.
<b>Technology Resources</b> (AV, data show, Smart Board, software, etc.)	Data show projectors.
<b>Other Resources</b> (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Conventional / Digital X-ray machine.

## G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching	Program Leaders	Direct
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

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

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

**Assessment Methods** (Direct, Indirect)

## H. Specification Approval Data

<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>

