

a) Course Code, name and credits:
BMI 2202 /Science and Instrumentation II/3
b) Description: General description of the course, include mode of delivery.
<p>General X ray equipment is described including generators. Grids, collimators, filters and filtration are explained. Exposure factors and image quality are studied in detail and the student creates an exposure technique chart and performs quality control tests to determine image quality and analyze film resolution and film faults.. Film identification systems and forms of radiographic film viewing are incorporated into the complete examination process. Timing, switching and interlocking systems are taught in relation to equipment usage. Fluoroscopy and image intensification are described in detail.</p> <p>Delivery Mode: Classroom sessions</p>
c) Reasons for introducing course:
<p>If the course is replacing an existing one, state the existing course code, name and credits, the degree(s) for which the course is a requirement and the reason for the replacement. The old course outline must be attached.</p> <p>If the course is a stand alone course, a statement on the demand for the course must be made.</p>
Course demand is based on curriculum
d) Are there similar courses in the Faculty or University? If so give course codes, names and credits, and explain why they could not be used.
Nil
e) Co-requisites and Pre-requisites:
Program basic entrance requirements
f) Learning outcomes: State what the student will be able to do on the successful completion of the course. (See Appendix 3 Page 11 for guidelines)
<p>The student will have the skills, knowledge and ability to</p> <ul style="list-style-type: none"> • Operate a general x ray unit within safety limits • Perform quality control tests to determine image quality • Analyze film resolution and film faults • Identify grids, filters and collimators and use them to perform high quality radiographs • Describe and use timers, switches and interlocking systems • Describe the different film viewing systems available • Identify film artifacts on radiographs and use corrective procedures to avoid these

<ul style="list-style-type: none"> • Construct a exposure technique chart using exposure factor knowledge • Describe the major features of an image intensifier • Operate and manipulate safely image intensifier fluoroscopic equipment • Work independently and as a team member • Apply analytical criteria to the use and function of x ray equipment 			
g) Contact Hours:			
	Contact hrs per wk*	Class size	Mode of delivery
Lectures	2	25	Face to face/ online sessions
Tutorials	1	25	Face to face
Labs	2	25	Face to face
h) Method of Evaluation/Assessment:			
(i) For courses with a final examination of at least 50%.			
Course work: 2 tests%, 8 labs%, 2 assignments%, etc			
Final exam: 3hours,%			
(ii) For continuously assessed courses.			
Test 1%, etc, Assignment%, Long paper%, etc.			
Course work:	2 tests 15% each, 2 assignments 5% each		
Final exam:	3 hours, 60%		
i) Requirements to pass course: e.g. Must pass Course Work and Exam, etc. to pass Course.			
Must pass Course Work and Final Exam to pass Course			
j) Grading System:			
A	80-100 %		
B	70-79 %		
C	60-69 %		
D	55-59%		
F	0-54%		
k) Course Content:			
Week	Topics		
1	X Ray Equipment controls - function of meters ,switches and controls		

2	Generators
3	Timers, interlocking devices
4	Accessory equipment
5	Exposure Factors, function of kilovoltage, milliamperage, time, focus to film distance/SID
6	Adjustment of factors for age of patient, size of subject; presence of POP Adjustment for pathological changes in subject,
7	Image Quality/Exposure charts
8	Identification and viewing systems
9	Film Analysis and Critique
10	Practical Assessment
11	Image Intensification/Fluoroscopy
12	Image Intensification/Fluoroscopy
13	Image Recording systems (associated with II)
14	Review
15	Final Examination

l) Book Lists/Recommended Reading: List text books, journals, internet resources using the APA format (see Appendix 4, Page 12). Use an asterisk at the beginning of each reference to indicate texts/journals which are available in the University Library.

Core texts and journals

Additional reading material

Booklist

- Bushong, Stewart C. (2001). *Radiologic Science for Technologists*. 7th Edition. Mosby.
- Carlton, R., Adler, A.M. (2001). *Principles of Radiographic Imaging: An Art and a Science*. 3rd Edition. Delmar.
- Ball, J., Price, T. (1995). *Chesney's Radiographic Imaging*. 6th Edition. Blackwell Scientific.
- Curry, T.S., Dowdey, J.E., Murry, R.C. (1990). *Christensen's Physics of Diagnostic Radiology*. Lea and Febiger.
- Fauber, T.L. (2004). *Radiographic Imaging and Exposure*. 2nd Edition. C.V.Mosby Inc.

m) Staff requirements:

Lecturer for classroom sessions

n) Budget: The details given below are to be provided for a stand-alone course. Where the course is replacing one of equivalent course requirements, contact hours and credits, and one which is part of an existing degree programme, the budgetary details are not required; a statement with justification can be completed.