

## 5.6 MEDICAL RADIATION

### Introduction

The Bachelor of Health Science (Medical Radiation) is a 4-year (8 semesters) full time academic programme which has been offered since academic year 2001/2002 to students with qualification of A-level, STPM, matriculation, diploma in radiography or equivalent. The government of Malaysia has accredited this programme since 2004.

This programme provides theoretical and practical training experiences, which will allow students to understand, able to explain and utilise ionising and non-ionising radiation in the diagnosis and treatment of patients. The offering of this programme is expected to assist in fulfilling the national requirements for trained personnel in the medical radiation science disciplines. This programme opens up career opportunities in the field of diagnostic radiology, nuclear medicine, radiotherapy and medical radiation protection which required knowledge and skills in these areas in order to ensure the safety of the graduates, medical and health professionals, patients and members of the general public.

The students are required to complete a total of 140 units for the purpose of graduation. The whole programme consists of 111 units of core courses, 15 units of university courses and 14 units of elective courses.

### List of Core Courses of the Medical Radiation Programme

No.	Course Code	Title of Core Courses in the Medical Radiation Programme	Unit
1.	GTU101/3	Structure and Function of Humans I	3
2.	GTU103/3	Fundamental of Health Informatics	3
3.	GTU104/3	Structure and Function of Humans II	3
4.	GTU105/3	Psychology and Behavioral Sciences	3
5.	GTU106/3	Biochemistry and Basic Genetics	3
6.	GTX104/4	Introduction to Medical Radiation	4
7.	GTX105/4	Medical Radiation Physics I	4
8.	GTX106/3	Mathematics of Radiation Science I	3
9.	GTX213/3	Basic Science of Nuclear Medicine	3
10.	GTX214/3	Basic Science of Diagnostic Radiology	3
11.	GTX215/4	Medical Radiation Physics II	4
12.	GTX216/3	Radiographic Anatomy	3
13.	GTX217/3	Mathematics of Radiation Science II	3
14.	GTU301/3	Ethics and Law for the Health Professionals	3
15.	GTU302/3	Biostatistics	3
16.	GTU304/3	Research Methodology	3
17.	GTX307/3	Radiation Protection and Safety II	3
18.	GTX321/4	Imaging Techniques I	4
19.	GTX322/3	Radiation Protection and Safety I	3
20.	GTX323/3	Introduction to Radiation Dosimetry	3

No.	Course Code	Title of Core Courses in the Medical Radiation Programme	Unit
21.	GTX324/4	Diagnostic Radiology Imaging	4
22.	GTX325/4	Nuclear Medicine Imaging	4
23.	GTX326/4	Principles of Radiotherapy	4
24.	GTX327/3	Brachytherapy	3
25.	GTX407/3	Quality Assurance in Medical Radiation II	3
26.	GTX408/3	Dose Calculations and Treatment Planning in Radiotherapy	3
27.	GTX410/4	Imaging Techniques II	4
28.	GTX411/4	Radiotherapy Techniques	4
29.	GTX412/3	Nuclear Medicine Imaging Techniques	3
30.	GTX414/3	Quality Assurance in Medical Radiation I	3
31.	GTX415/8	Research Project	8
32.	GTX416/4	Professional Training	4
<b>Total Unit of Core Courses</b>			<b>111</b>

### Programme Learning Outcomes

At the completion of the programme, graduates will be able to:

- PO1: Apply comprehensive knowledge in radiotherapy, medical imaging (including nuclear medicine) and radiation protection.
- PO2: Demonstrate technical skills in medical imaging and radiotherapy competently, included implementation of corrective actions.
- PO3: Demonstrate thinking skills and provide solutions to address challenges in medical imaging and radiotherapy practices using relevant techniques involving critical and lateral thinking.
- PO4: Apply communicate skills effectively in verbal and written forms with healthcare professionals and the stakeholders and present information and findings coherently.
- PO5: Demonstrate social skills and collaborate with other healthcare professionals.
- PO6: Comply with the legal, ethical principles and the professional codes of conduct in medical imaging, nuclear medicine and radiotherapy and adherence to radiation safety requirements and regulations.
- PO7: Apply and engage in principles of lifelong learning in academic and career development; conduct research and able to utilise ICT and information management system to enhance their medical imaging, nuclear medicine and radiotherapy practice and skills.
- PO8: Apply broad business and real world perspectives in workplace and everyday activities and demonstrate entrepreneurial skills.
- PO9: Demonstrate sensitivities and responsibilities toward the community, culture, religion and environment. Also able to show leadership.

**Recommended Registration Guidelines for the Core Courses of the Medical Radiation Programme**

<b>Code</b>	<b>Courses</b>	<b>Unit</b>	<b>Code</b>	<b>Courses</b>	<b>Unit</b>
<b>Year 1 Semester I</b>			<b>Year 1 Semester II</b>		
GTU101/3	Structure and Function of Humans I	3	GTU104/3	Structure and Function of Humans II	3
GTU103/3	Fundamental of Health Informatics	3	GTX105/4	Medical Radiation Physics I	4
GTU105/3	Psychology and Behavioral Sciences	3	GTX106/3	Mathematics of Radiation Science I	3
GTU106/3	Biochemistry and Basic Genetics	3			
GTX104/4	Introduction to Medical Radiation	4			
<b>16</b>			<b>10</b>		

<b>Code</b>	<b>Courses</b>	<b>Unit</b>	<b>Code</b>	<b>Courses</b>	<b>Unit</b>
<b>Year 2 Semester I</b>			<b>Year 2 Semester II</b>		
GTX215/4	Medical Radiation Physics II	4	GTX213/3	Basic Science of Nuclear Medicine	3
			GTX214/3	Basic Science of Diagnostic Radiology	3
			GTX216/3	Radiographic Anatomy	3
			GTX217/3	Mathematics of Radiation Science II	3
<b>4</b>			<b>12</b>		

**Recommended Registration Guidelines for the Courses of the Medical Radiation Programme**

<b>Code</b>	<b>Courses</b>	<b>Unit</b>	<b>Code</b>	<b>Courses</b>	<b>Unit</b>
<b>Year 3 Semester I</b>			<b>Year 3 Semester II</b>		
GTU304/3	Research Methodology	3	GTU301/3	Ethics and Law for the Health Professionals	3
GTX322/3	Radiation Protection and Safety I	3	GTU302/3	Biostatistics	3
GTX323/3	Introduction to Radiation Dosimetry	3	GTX307/3	Radiation Protection and Safety II	3
GTX324/4	Diagnostic Radiology Imaging	4	GTX321/4	Imaging Techniques I	4
GTX325/4	Nuclear Medicine Imaging	4	GTX326/4	Principles of Radiotherapy	4
			GTX327/3	Brakiterapi	3
<b>17</b>			<b>20</b>		

<b>Code</b>	<b>Courses</b>	<b>Unit</b>	<b>Code</b>	<b>Courses</b>	<b>Unit</b>
<b>Year 4 Semester I</b>			<b>Year 4 Semester II</b>		
GTX410/4	Imaging Techniques II	4	GTX415/8	*Research Project	4
GTX412/3	Nuclear Medicine Imaging Techniques	3	GTX407/3	Quality Assurance in Medical Radiation II	3
GTX414/3	Quality Assurance in Medical Radiation I	3	GTX408/3	Dose Calculations and Treatment Planning in Radiotherapy	3
GTX415/8	*Research Project	4	GTX411/4	Radiotherapy Techniques	4
GTX416/4	Professional Training	4			
<b>18</b>			<b>14</b>		