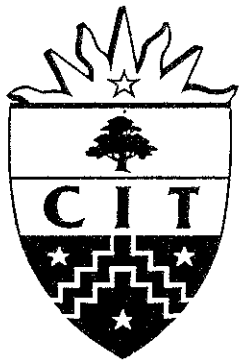
Central Institute of Technology

Te Whare Wananga O Whirinaki



DEPARTMENT OF RADIATION THERAPY

BACHELOR OF HEALTH SCIENCE (Radiation Therapy)

BHSc(RT)

CURRICULUM DOCUMENT

February 2001

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Stage III

1. Aims of the Programme

1.1 General Aims

The Bachelor of Health Science programme aims to produce graduates with the following attributes:

1.1.1 clinical competence in radiation therapy, demonstrating safe and professional practice.

1.1.2 a sound understanding of the theoretical basis for clinical practice.

1.1.3 excellent interpersonal skills in the demonstration of empathy and sensitivity to all patients.

1.1.4 excellent communication skills, both oral and written in communicating with colleagues and the health care team.

1.1.5 the ability to act independently when professionally appropriate as well as co-operatively with colleagues and other health care team members.

1.1.6 sound analytical skills to enable flexible and creative responses to the changes and challenges presented by clinical practice.

1.1.7 the skills of the "reflective practitioner" in being willing and able to review their own clinical competence and be responsive to the need for personal and professional change.

1.1.8 the ability to apply the principles of research as a foundation for on-going personal and professional development.

1.1.9 an awareness of the importance of the Treaty of Waitangi to the delivery of health care in New Zealand.

Cognitive skills will be progressively enhanced throughout the learning activities that will develop both an academic foundation and technical skill. The student will deal with problems of increasing complexity, recognising increasing contextual dimensions and the recognition of a range of possible solutions. This will involve increasingly proficient and perceptive interpersonal skills.

2. Occupational Conditions

During the programme, students must undertake approved work experience and present to CIT prior to entry to the RT7302 Clinical Studies III final competency based assessment, a validated log of Work Experience hours.

- The Work Experience complements the formal academic clinical components of the BHSc (RT) ie Clinical Studies I, Clinical Studies II and Clinical Studies III and fully prepares students for clinical practice upon qualifying.
- Work Experience hours can be completed at times during the year which are not committed to academic studies, eg : mid November to mid February and inter-semester breaks.
- It is recommended that the Work Experience hours are evenly divided between Stage II and Stage III so that integration and consolidation of learning is based on a standard policy.
- The requirements for State Registration (Medical Radiation Technologists Board) require that a ***minimum*** of 2180 clinical hours are completed. The Work Experience hours plus the Clinical Studies hours meet this requirement. Therefore the award of the degree incorporates the professional registration requirements.

Structure

- Work Experience is a pre-requisite for entry to the RT7302 Clinical Studies III final competency based assessment.
- Only in exceptional circumstances will a student be allowed to sit the final competency based assessment before completing the Work Experience module.
  An example of 'exceptional circumstances' may be a student who has passed all practical assessments in stage II and III, but due to illness has not been able to complete the Work Experience hours.
- No student will be able to graduate until the Work Experience module has been completed.

3. Programme Development

The Bachelor of Health Science (Radiation Therapy) programme is a development of the existing National Diploma in Medical Radiation Therapy – which in turn developed from the CIT Diploma in Therapeutic Radiography.

The radiation therapy profession have, for a number of years, considered that a degree level qualification should be available in New Zealand. In 1990 a survey of the profession was conducted in which 81% of the respondents favoured a degree as the standard qualification.

The British profession has had a degree in radiation therapy for many years as has Australia. The USA are currently moving in this direction also. Canada has recently announced a requirement for a degree level qualification as a pre-requisite for registration by the year 2005.

For New Zealand graduates to maintain parity with their overseas counterparts they will require a bachelor's level degree. Between 50-75% of New Zealand graduates in radiation therapy gain overseas experience in Australia and the United Kingdom.

A degree in Diagnostic Imaging has been developed by UNITEC and commenced in 1995. Manawatu Polytechnic is also offering a degree, a Bachelor in Applied Science (Medical Imaging Technology) which, subject to NZQA approval, will commence in 1996. The Bachelor of Health Science (Radiation Therapy) allows radiation therapists to maintain parity with their professional colleagues in New Zealand.

The degree has been developed in consultation with the radiation therapy profession. A sub-committee of the Radiation Therapy Advisory Committee was formed and had the major responsibility for both the structure and content of the degree programme.

4. Programme Description

The curriculum is designed so that modules are taught as part of an integrated and coherent structure, with a consistent overall process of learning and problem solving and a series of vertical and horizontal learning areas or strands. The programme is based on 35% practical content and 65% theoretical content with 21 CIT credits devoted to clinical studies and 39 CIT credits devoted to theory studies.

4.1 The Three Stage Programme

The Bachelor of Health Science (Radiation Therapy) comprises three stages. Generally each stage will be completed in one year's full time study.

All modules are compulsory.

Each stage consists of 20 CIT Credits (1200 notional hours of student learning)

4.2 Stage I

Stage I consists of the following modules:

Module Title	CIT Credit Value
RT5101 Anatomy, Physiology and Pathology I	8 CIT Credits
RT5102 Clinical Studies I	1 CIT Credit
RT5103 Radiation Physics	2 CIT Credits
HS5104 Behavioural Science I	2 CIT Credits
RT5106 Radiation Technology I	3 CIT Credits
RT5107 Radiation Therapy and Oncology I	4 CIT Credits

4.3 Stage II

Stage II consists of the following modules:

Module Title	Recommended Entry Level	CIT Credit Value
RT6201 Anatomy, Physiology and Pathology II	*Anatomy, Physiology and Pathology I*	1 CIT Credit
RT6202 Clinical Studies II	*Clinical Studies I*	10 CIT Credits
RT6204 Behavioural Science II	*Behavioural Science I*	1 CIT Credit
HS6205 Principles of Research		1 CIT Credit
RT6206 Radiation Technology II	*Radiation Technology I & Radiation Physics*	3 CIT Credits
RT6207 Radiation Therapy and Oncology II	*Radiation Therapy and Oncology I*	4 CIT Credits

4.4 Stage III

Stage III consists of the following modules:

Module Title	Recommended Entry Level	Credit Value
RT7302 Clinical Studies III	*Clinical Studies II*	10 CIT Credits
RT7304 Behavioural Science III	*Behavioural Science II*	1 CIT Credit
HS7305 Applied Research Methodology	*Principles of Research*	2 CIT Credits
RT7306 Radiation Technology III	*Radiation Technology II*	3 CIT Credits
RT7307 Radiation Therapy and Oncology III	*Radiation Therapy and Oncology II*	4 CIT Credits
RT7308 Work Experience	*All stage I Modules*	*NIL*

4.5 Integration of a Process Curriculum

Vertical and horizontal integration of the programme is important to enable students to develop increasingly complex cognitive, affective and psychomotor skills. This integration has been achieved by the overall programme design which links module content and learning outcomes within and across stages.

Integration will also be achieved by the extensive use of case studies, projects, problem solving exercises, seminars etc, and through clinical situations. Sequencing will guide the student to obtain sufficient background information and level of skill to deal with progressively more complex material and situations.

Integration will require good communication among lecturers. To this end the Programme Co-ordinator is responsible for regular and frequent communication between members of the teaching team.

4.6 Learning, Interacting and Self-Management

The way in which the student learns and interacts with others (staff, students, patients and other professionals) throughout the programme is considered to be the key to the achievement of the aims concerning personal growth. Students will be encouraged, from the outset, to develop the skills of an independent learner and to reflect upon their learning. The ability to self-assess is an integral part of the programme's objectives.

It is essential to facilitate the early adaptation of students to expectations regarding their role in the learning process and their ability to interact with others.

Exercises in independent learning and critical thinking are introduced at the start of the programme. Developing effective verbal and written communication skills is an important aim throughout the programme. There are modules which specifically address these areas, such as the Behavioural Science modules at all levels. However, there is also a formal expectation of early application of the principles in all courses in the first stage and beyond.

In all modules, students will be required to investigate topic areas to a greater depth than that provided during class contact hours. To this end, formal class contact will usually be no more than 20 hours per week.

4.7 Accessing a Specific Academic Base

Biological Sciences

Students will develop the ability to understand the basic systems of the human body and how they interact. Because of the nature of the professional activities of radiation therapists the emphasis in the study of pathology will be towards cancer and its associated conditions. The *Anatomy, Physiology and Pathology* module forms a foundation for students to meet the learning outcomes of the *Radiation Therapy and Oncology* modules of the programme at the more advanced levels.

Students will be expected to develop an in-depth understanding of the relationship between pathology and treatment, relevant to radiation therapy.

4.8 Behavioural Science

Students need to have access to knowledge from behavioural science to enable them to perform as competent professionals in the field of radiation therapy.

This knowledge is essential to enable graduates to understand the context of illness and work with clients, colleagues and others they may interact with while performing as a professional in the field. These skills will be integrated into the *Clinical Studies* modules as well as the more specific *Behavioural Science* modules.

4.9 Physics and Allied Sciences

Since most radiation treatment is provided using advanced technology students require a sound knowledge of physics as well as sufficient understanding of electronics to enable them to perform in a professional manner. Specialist lecturers will be employed to ensure that the latest information is presented to students. The modules relevant to this area are *Radiation Physics* at Stage I and the three stages of *Radiation Technology*.

4.10 Clinical Studies

This section of the curriculum, which includes the *Clinical Studies* modules at all three stages, is designed to prepare the student for practice in a modern clinical setting. The clinical studies modules are designed to integrate the students' learning to a point where practical skills and theoretical understanding merge. Students currently have the opportunity to develop their clinical skills under supervision in well equipped radiation oncology departments in Auckland, Waikato, Palmerston North, Wellington, Christchurch and Dunedin.

4.11 Research

As professionals in the field of radiation therapy graduates must be able to critically analyse research published by others. To this end students will study the principles of good research methodologies. While these principles are covered in the *Principles of Research* and *Applied Research Methodology* modules the concepts will be carried through all the subjects of the final stages of the programme.

5. Timing of the Programme

5.1 Duration of the Course

The Bachelor of Health Science (Radiation Therapy) is a three year full time programme.

5.2 Composition of Each Stage

5.2.1 Stage I

30 weeks attending classes at the Central Institute of Technology.
3 weeks clinical studies in the Sponsoring Hospital.

5.2.2 Stage II

10 weeks clinical studies in the Sponsoring Hospital.
9 weeks attending classes at the Central Institute of Technology.
10 weeks clinical studies in the Sponsoring Hospital.
1 week clinical studies in a hospital other than the Sponsoring Hospital.
6 weeks attending classes at the Central Institute of Technology.

5.2.3 Stage III

8 weeks attending classes at the Central Institute of Technology.
11 weeks clinical studies in the Sponsoring Hospital.
1 week clinical studies in a hospital other than the Sponsoring Hospital.
8 weeks attending classes at the Central Institute of Technology.
10 weeks clinical studies in the Sponsoring Hospital.

For Stage II and III, the week allocation for the time in the Sponsoring Hospital and at CIT may alter slightly. This is dependant on the semester breaks during each academic year.

6. Structure of the Programme

The programme consists of 60 CIT Credits (3600 notional hours of student learning) divided into three stages.

6.1 Stage I

RT5101	Anatomy, Physiology and Pathology I
RT5102	Clinical Studies I
RT5103	Radiation Physics
HS5104	Behavioural Science I
RT5106	Radiation Technology I
RT5107	Radiation Therapy and Oncology I

6.2 Stage II

RT6201	Anatomy, Physiology and Pathology II
RT6202	Clinical Studies II
RT6204	Behavioural Science II
HS6205	Principles of Research
RT6206	Radiation Technology II
RT6207	Radiation Therapy and Oncology II

6.3 Stage III

RT7302	Clinical Studies III
RT7304	Behavioural Science III
HS7305	Applied Research Methodology
RT7306	Radiation Technology III
RT7307	Radiation Therapy and Oncology III
RT7308	Work Experience

7. Assessment

7.1 Assessment Philosophy

All assessment tasks will allow students to demonstrate their achievement of the learning outcomes being assessed.

This philosophy will be implemented by the use of the following strategies:

- All assessment tasks will be appropriate for the level and nature of the learning outcomes being assessed.
- Each assessment task will be clearly stated.
- Dates for assessments will be advised to students in advance. The dates for all summative assessments will be published at the beginning of each semester.
- Self and peer assessment will be encouraged and used whenever appropriate.
- Formative assessments will be carried out to identify difficulties students may be encountering, and to provide frequent feedback on learning progress.
- When it is appropriate for students work to be returned after marking, it will be returned as soon as practical.

7.2 Assessment Pattern

- **50% must be gained in coursework to be eligible to take the final examination in the appropriate modules.**

RT5101: Anatomy, Physiology and Pathology I
Summative assessment will consist of the following :

• one test	=	15% of total mark
• one test	=	15% of total mark
• one test	=	15% of total mark
• one assignment (Pathology)	=	15% of total mark
• one final 3 hour examination	=	40% of total mark

A pass will be awarded to all students who gain 50% overall.

RT5102: Clinical Studies I
Summative assessment will consist of the following :

• one theory test	=	Pass/Fail
• one clinical journal	=	Pass/Fail

A pass will be awarded to all students who gain a pass in **each** component.

RT5103: Radiation Physics
Summative assessment will consist of the following :

• problem sheets	=	5% of total mark
• labs	=	25% of total mark
• one test	=	15% of total mark
• one test	=	15% of total mark
• one final 2 hour examination	=	40% of total mark

A pass will be awarded to those students who gain 50% overall.

HS5104: Behavioural Science I
Summative assessment will consist of the following :

• one test	=	10% of total mark
• one test	=	20% of total mark
• oral presentation	=	10% of total mark
• one assignment	=	20% of total mark
• one final 2 hour examination	=	40% of total mark

A pass will be awarded to all students who gain 50% overall.

RT5106: Radiation Technology I
Summative assessment will consist of the following :

• one test (photography)	=	15% of total mark
• one assignment (photography)	=	5% of total mark
• one test (equipment)	=	15% of total mark
• one test (radiation protection &imaging)	=	15% of total mark
• assignments (equipment, radiation protection and imaging)	=	10% of total mark
• one final 3 hour examination	=	40% of total mark
• computer assignments	=	Pass / Fail

A pass will be awarded to all students who gain 50% overall, and who pass the computer assignments.

RT5107: Radiation Therapy and Oncology I
Summative assessment will consist of the following :

• one test	=	20% of total mark
• one test	=	20% of total mark
• one assignment	=	20% of total mark
• one final 3 hour examination	=	40% of total mark

A pass will be awarded to all students who gain 50% overall.

RT6201: Anatomy, Physiology and Pathology II
Summative assessment will consist of the following :

• one presentation		40% of total mark
• one test	=	60% of total mark

A pass will be awarded to all students who gain 50% overall.

RT6202: Clinical Studies II
Summative assessment will consist of the following :

• one practical assessment (treatment)	=	Pass/Fail
• one practical assessment (planning)	=	Pass/Fail
• one clinical journal	=	Pass/Fail

A pass will be awarded to those students who gain a pass in <u>each</u> component.

RT6204: Behavioural Science II

Summative assessment will consist of the following :

- one project = 50% of total mark
- one test = 50% of total mark

A pass will be awarded to all students who gain 50% overall.

HS6205: Principles of Research

Summative assessment will consist of the following :

- one assignment (research) = Pass/Fail
- one assignment (statistics) = Pass/Fail

A pass will be awarded to those students who gain a pass in each component.

RT6206: Radiation Technology II

Summative assessment will consist of the following :

- one theory test = 30% of total mark
- three assignments at 10% each = 30% of total mark
- one final 3 hour examination = 40% of total mark

A pass will be awarded to all students who gain 50% overall.

RT6207: Radiation Therapy and Oncology II

Summative assessment will consist of the following :

- One test (radiobiology) = 20% of total mark
- One test = 20% of total mark
- One practical assignment = 20% of total mark
- One 3 hour examination = 40% of total mark

A pass will be awarded to those students who gain 50% overall.

RT7302: Clinical Studies III

Summative assessment will consist of the following :

- one practical assessment (treatment) = Pass/Fail
- practical assessment (planning) = Pass/Fail
- one clinical journal = Pass/Fail
- one competency based assessment (CBA)= Pass/Fail

A pass will be awarded to those students who gain a pass in each component.

RT7304: Behavioural Science III

Summative assessment will consist of the following :

- one test = 60% of total mark
- one presentation = 40% of total mark

A pass will be awarded to all students who gain 50% overall.

HS7305: Applied Research Methodology

Summative assessment will consist of the following :

- one project = Pass/Fail

A pass will be awarded to those students who gain an A, B or C Grade.

RT7306: Radiation Technology III

Summative assessment will consist of the following :

- three assignments at 20% each = 60% of total mark
- one final 3 hour examination = 40% of total mark

A pass will be awarded to all students who gain 50% overall.

RT7307: Radiation Therapy and Oncology III

Summative assessment will consist of the following :

- One test (radiobiology) = 20% of total mark
- One test = 20% of total mark
- One practical assignment = 20% of total mark
- One 3 hour examination = 40% of total mark

A pass will be awarded to those students who gain 50% overall.

7.3 Assessment Standards

The overall standards are laid out in the *Aims of the Programme* as the attributes of the graduate of the programme. (See 1. Aims of the Programme, p.1).

These aims have been developed in close association with the profession through the Radiation Therapy Advisory Degree Sub-committee.

7.4 Moderators

CIT has appointed both internal and external moderators in accordance with the policy set out in Appendix A.

7.5 Monitor

CIT has appointed a programme monitor. See Appendix B for an outline of the role of monitor.

8. Procedures for Changes to the Programme

There are three levels of change in the programme which can take place:

8.1 Minimal Changes

Small alterations to the programme will be implemented within the Department of Radiation Therapy. These changes will be referred to the Divisional Academic Board by the Board of Studies.

8.2 Minor Changes

Where the changes are more significant, but do not involve the structure of the programme they will be referred on by the Divisional Academic Board to the Academic Board of CIT.

8.3 Major Changes

Any change to the overall structure will be referred to NZQA for approval following approval by the CIT Academic Board.

9. Management of the Programme

9.1 Programme Co-ordination

The programme co-ordinator has responsibility for the overall co-ordination of the programme.

9.2 Module Leaders

Module leaders are responsible for the efficient co-ordination and delivery of modules.

9.3 Year Leaders

Year leaders have an overall responsibility for the students in a particular stage of the course. Responsibilities include pastoral care, progress reports, assessment schedules and attendance rolls.

10. Relationship to Other Programmes

10.1 New Zealand Undergraduate Degrees

The BHSc(RT) is closely aligned with the BHSc(Podiatry), taught at CIT, as far as academic level is concerned. These two degrees are delivered in the same division and share two modules — *HS5104 Behavioural Science I* and *HS6205 Principles of Research.*

The BHSc(RT) programme is consistent with nursing and other health degrees such as occupational therapy and physiotherapy in that graduates from these programmes can expect to gain access to the same postgraduate courses.

10.2 Overseas Undergraduate Qualifications

A number of New Zealand radiation therapists have gained or are enrolled in the BSc (Radiography) Conversion Programme from the Anglia Polytechnic University in England. This programme and others such as the BSc(Hons) Radiotherapy from Southbank University, London, require students to attain high levels of clinical competency, the skills of the reflective practitioner and the skills of critical analysis in relation to research. The outcomes of these qualifications are similar to those of the BHSc(RT) programme.

10.3 New Zealand Postgraduate Qualifications

There are a number of postgraduate qualifications available to the graduates from the BHSc(RT). For example the Master of Health Science Programmes offered by Otago University and the Auckland Institute of Technology.

10.4 Overseas Postgraduate Qualifications

A number of the graduates from the National Diploma in Medical Radiation Therapy have obtained entry to the postgraduate level Higher Diploma of the College of Radiographers in London.

11. Programme Regulations

11.1 Institute Regulations

The Institute regulations are issued under the statutory authority of the Council of the Central Institute of Technology. The regulations cover:

- Interpretation of the Regulations.
- General Regulations.
- Academic Regulations.
- Allied Regulations.

11.2 Bachelor of Health Science (Radiation Therapy) Regulations

The current Institute Academic Regulations apply except where varied by the programme regulations below.

11.3 Entry Requirements

All enrolments to the Bachelor of Health Science (Radiation Therapy) Degree programme are subject to the approval of the Admissions Committee of the Faculty Board of Studies. To gain entry to the programme applicants must satisfy the following criteria:

- In general students will be sponsored by a hospital which operates an oncology unit. This is to ensure that there is adequate access to an appropriate clinical environment. An exception to this may be made provided the applicant can provide evidence that she or he can obtain the required clinical experience and tuition. Potential students apply directly to the hospital and are interviewed as to suitability.

- Students are required to hold a current approved first aid certificate on entry to the programme. This Certificate is to be maintained throughout the duration of the programme.

Selection Criteria

Applicants will be selected on the basis of having met the following:

- Demonstration of suitability to the profession by interview
- Achievement of one or more of the following academic criteria:
  - i) have passed Bursary in English, Mathematics and Physics or Biology at grade C or better;
  - ii) have passed Bursary in English, Mathematics and one other subject at grade C or better;
  - iii) have passed Sixth Form Certificate in four subjects, including; English, Mathematics and at least one Science subject at grade 4 or better.
- Mature Students who have attained the age of 20 years by June 1 in the year for which admission is sought, may be admitted to the programme if it is considered by the Admissions Committee that they are likely to achieve success on the programme.

11.4 Affirmative Action

Maori and Pacific Island students, who meet the admission criteria may apply for admission under the Institute's affirmative action policy.

11.5 Recognition of Prior Learning

Recognition of formal prior learning is catered for by the Institute's regulations for cross-crediting.

The Institute has a policy for the recognition of non-formal recognition of prior learning.

11.6 Completion of the Programme

The programme consists of three stages. Generally students must succeed at each stage to progress to the next stage.

The structure of the programme makes it unlikely that a student would be able to complete a trailing subject and continue with the following stage of the programme.

Students will be expected to complete the programme in five years or less. Students who do not complete the programme within a three year period will need to seek an extension of their sponsorship from a hospital or other approved clinical training institution.

11.7 Awarding of Degree

Candidates must pass all modules in the programme and obtain a minimum of 60 (CIT) credits to be awarded the Bachelor of Health Science (Radiation Therapy) degree by the Central Institute of Technology.

11.8 Cross Credits

There are no established cross credits for this programme.

Each application will be considered in terms of the CIT regulations governing cross-credits in the Central Institute of Technology Regulations' Directory.

11.9 Reassessment Policy

- A student may apply to resit one assessment only within any module, unless otherwise stipulated in the coursework document.
- Students will be informed of the assessment policy in the coursework document for each module. Reassessment is usually only available to students who demonstrate a genuine attempt at the initial assessment.
- A reassessment must be taken within two weeks of the initial assessment date except for final examinations.

MODULE DESCRIPTORS

STAGE ONE MODULES

RT5101	Anatomy, Physiology and Pathology I
RT5102	Clinical Studies I
RT5103	Radiation Physics
HS5104	Behavioural Science I
RT5106	Radiation Technology I
RT5107	Radiation Therapy and Oncology I

12. Anatomy, Physiology and Pathology I

Reference Number :	RT5101
Date :	October 1997
Duration :	240 contact hours and 240 hours of independent learning
CIT Credit Value :	Eight (8)
Aim :	To enable students to gain a basic understanding of the principles and terminology of the anatomy, physiology and pathology of the human body.
Recommended Entry Level :	Entry to programme
Learning Outcomes :	On completion of this module the successful student will be able to:

1. describe the normal anatomical organisation of the human body in terms of cells, tissue, organ and systems;
2. describe the principal systems of the human body and their function;
3. explain the ways in which body systems interact to maintain homeostasis;
4. identify the relationship of all organs to other organs, structures, and to the surface landmarks of the body;
5. discuss common pathological changes which occur in the human body.

Content

Corresponding to Learning Outcome 1

1. Basic cell organisation and biochemistry
2. Classification of body tissues
3. Organisation and structure of major body systems

Corresponding to Learning Outcome 2

1. Description and function of : skeletal system
   muscular system
   nervous system
   cardiovascular system
   lymphatic system
   respiratory system
   urinary system
   digestive system
   endocrine system
   reproductive system
   integumentary system

Corresponding to Learning Outcome 3

1. Principles and functions of homeostasis
2. Maintenance of homeostasis

Corresponding to learning outcome 4

1. Boundaries and contents of : head and neck
   thorax
   abdomen
   upper limbs
   spine
   pelvis
   lower limbs
2. Main landmarks and planes of the body

Corresponding to Learning Outcome 5

1. Basic pathological terminology
2. Micro-organisms
3. Inflammation
4. Tumours
5. Genetic abnormalities
6. Nutritional and metabolic disorders
7. Common pathological changes in each of body's major systems - including treatment and prognosis

Suggested Learning and Teaching Approaches :

The learning outcomes of this module could be achieved by the following:

- student centred tutorials with an emphasis on class discussion and debate;
- seminar and project presentations;
- the use of media such as videos, journals, texts, newspaper articles and television will provide a rich source of material for discussion, and exploration;
- laboratory demonstrations.

Assessment of Learning Outcomes :

Summative assessment will consist of the following :

- one test = 15% of total mark
- one test = 15% of total mark
- one test = 15% of total mark
- one assignment (Pathology) = 15% of total mark
- one final 3 hour written examination = 40% of total mark

50% must be gained in coursework to be eligible to take the final examination.
A pass will be awarded to all students who gain 50% overall.

Reporting Results to Students

Results will be reported to students as follows:

Course work, out of	60
Final examination, out of	40
TOTAL	100

Student result notices will carry grades from A to E.

Resources

Van Wynsberghe, D Norback, C R and Carola R.	Human Anatomy & Physiology (3rd Edition) McGraw Hill, New York, 1995.
Backhouse, K: Hutchings,R.	A Colour Atlas of Surface Anatomy, Wolfe, 1986
Brehm, B.	Essays on Wellness. Harper Collins 1993
Cohen, B.	Medical Terminology, J B Lippincott Company 1989
Donnelly, P: Wistreich G.	Human Body, Harper & Row, 1989
Hagen-Ansett	The Anatomy Workbook, J B Lippincott Company 1986
Lumley, J.	Surface Anatomy, Churchill Livingstone 1990
Mallone, K: Schneider, J.	Human Anatomy & Physiology Workbook, 2nd Edition, Harper Collins , 1991.
Martini, F	Fundamentals of Anatomy and Physiology, 4th Edition, Prentice Hall , 1997 - Test Item File - Study Guide - Applications Manual - Computer Tutorial
Ross, J; Wilson, K.	Anatomy and Physiology in Health and Illness; 7th Edition, Churchill Livingstone, 1992
Royal College of Surgeons of Edinburgh Edinburgh	A colour Atlas of Demonstrations in Surgical Pathology (Volume 1 & 2), Wolfe, 1983
Tortora, G:	Principles of Anatomy & Physiology, 8th Edition, Harper Collins 1995
Tranel, L; Mills, A.	Instructors Resource Guide. Prentice Hall 1995
CD ROM	Whole Body Computed Tomography, Blackwell Science, 1995
	Taber's Cyclopedic Medical Dictionary, 18th Edition. F.A. Davis Company, 1997

13. Clinical Studies I

Reference Number :	RT5102
Date :	October 1997
Duration :	40 contact hours and 100 hours of independent learning
CIT Credit Value :	One (1)
Aim :	The student will gain a basic understanding of the role of the radiation therapist.
Recommended Entry Level :	Entry to programme

Learning Outcomes :
On completion of this module the successful student will be able to:

1. discuss the concepts of health and illness;
2. describe the role of the radiation therapist;
3. explain the uses of clinical information in a radiation therapy department;
4. discuss ethical principles relevant to a radiation therapy department;
5. apply the basic principles of nursing care;
6. describe the basic principles of infection control in a radiation therapy department.

Content

Corresponding to Learning Outcome 1

1. Definitions of health and illness
2. Health spectrum
3. Factors influencing health
4. Homeostasis
5. Stages of illness
6. Current health issues
7. Introduction to the health system

Corresponding to Learning Outcome 2

1. Role of radiation therapist
2. Role of members of an oncology team
3. Role of student radiation therapist

Corresponding to Learning Outcome 3

1. Types of clinical information
2. Uses of clinical information
3. Privacy and security issues in relation to clinical information

Corresponding to Learning Outcome 4

1. Informed consent
2. Relevant legislation
3. Patients rights and responsibilities
4. Registration Board/Professional Organisations
5. Confidentiality
6. Patient rights and responsibilities

Corresponding to Learning Outcome 5

1. Department emergency procedures
2. Emergency first aid procedures including oxygen and suction
3. Safe patient mobility and positioning
4. Patient toileting including colostomy and urinary catheters
5. Vital signs in patients
6. Patient safety and comfort including IV fluids
7. Specific patient needs eg blindness, hearing impairment, diabetes

Corresponding to Learning Outcome 6

1. Personal cleansing procedures
2. Methods by which infections spread
3. Methods of cleaning and sterilisation in a radiation therapy department
4. Sterile/non-sterile dressings

Suggested Learning and Teaching Approaches :

The learning outcomes of this module could be achieved by the following :

- student centred tutorials with an emphasis on class discussion;
- seminar and project presentations;
- the use of media such as videos, journals, texts, newspaper articles and television will provide a rich source of material for discussion, exploration;
- use of a variety of small scale investigative techniques;
- clinically based observation.

Assessment of Learning Outcomes :

Summative assessment will consist of the following :

- one theory test = Pass/Fail
- one clinical journal = Pass/Fail

A pass will be awarded to all students who gain a pass in both components.

Reporting Results to Students

Results will be reported to students as Pass/Fail

Resources

Fully equipped and operational radiation therapy department.

Bomford, C; Kunkler, I; Sheriff, S. Walter and Miller's Textbook of Radiotherapy, 2nd Edition. Churchill Livingstone 1993

Gunn, C; & Jackson C S: Guidelines on Patient Care in Radiography (2nd Edition) Churchill Livingston, UK, 1991.

Murphy, G; Lawrence, N; Lenhard R. American Cancer Society Textbook of Clinical Oncology. American Cancer Society 1995

Shahabi, S. Blackburns Introduction to Clinical Radiation Therapy. Medical Physics Publishing Co-op, Madison 1989

14. Radiation Physics

Reference Number :	RT5103
Date :	October 1997
Duration :	90 contact hours and 30 hours of independent learning
CIT Credit Value :	Two (2)
Aim :	To introduce students to the principles of radiation physics and its application to radiation technology.
Recommended Entry Level :	Entry to programme

Learning Outcomes :
On completion of this module the successful student will be able to:

1. demonstrate skills of mathematical calculation as applied to radiation therapy;
2. demonstrate an understanding of general physics principles in relation to radiation therapy;
3. discuss basic principles of atomic physics;
4. discuss the basic physics of X and gamma radiation;
5. demonstrate an understanding of basic electrostatics, electric circuits, electrodynamics and electronics;

Content

Corresponding to learning outcome 1
1. Mathematical and algebraic calculations
2. Measurement - units and uncertainties
3. Normal distribution and experimental errors
4. Trigonometry and solid geometry

Corresponding to Learning Outcome 2
1. Kinematics, the description of motion
2. Dynamics - motion and force
3. Circular motion
4. Energy - types, transformations and conservation
5. Electromagnetic radiation
6. Optics - geometrical optics, lasers

Corresponding to Learning Outcome 3
1. Hydrogen spectrum
2. Emission and absorption spectra
3. Quantum mechanics
4. Electromagnetic spectrum

Corresponding to Learning Outcome 4

1. Ionizing radiation
2. Production of X-rays
3. Radioactive decay and the production of gamma rays
4. Interaction of radiation with matter
5. Application to radiation therapy

Corresponding to learning outcome 5

1. Electric charge and electric fields
2. Electric potential and electric energy
3. Electric currents and DC circuits
4. Magnetic fields and extractions with currents and moving conductors
5. Electrical measurements
6. Solid state components and devices

Suggested Learning and Teaching Approaches :

The learning outcomes of this module could be achieved by the following :

- student centred tutorials with an emphasis on class discussion and debate;
- seminar and project presentations;
- lectures, including laboratory demonstrations;
- practical sessions.

Assessment of Learning Outcomes :

Summative assessment will consist of the following :

• problem Sheets	=	5% of total mark
• labs	=	25% of total mark
• one test	=	15% of total mark
• one test	=	15% of total mark
• one final 2 hour written examination	=	40% of total mark

50% must be gained in coursework to be eligible to take the final examination.
A pass will be awarded to those students who gain 50% overall.

Reporting Results to Students

Results will be reported to students as follows:

Course work, out of	60
Final examination, out of	40
TOTAL	100

Student result notices will carry grades from A to E.

Resources

Stanton, R; Stinton, D.	Applied Physics for Radiation Oncology (2nd Edition). Medical Physics Publishing, Wisconsin, US. 1996.
Burchill, D.	Form 6 Physics Revision, ESA Publications 1990
Chesney, D.	X-Ray Equipment for Student Radiographers, Blackwell Scientific, Oxford 1984
Duncan, T.	Physics, John Murray 1987
Freedman, D; Pisani, R; Purves, R	Statistics, W W Norton 1978
Giancoli, D.	Physics, Prentice Hall 1985
Griffiths, S; Short, C.	Radiotherapy : Principles to Practice, Churchill Livingstone 1994
Halliday, D.	Physics, John Wiley & Sons 1966
Hendee, W.	Radiation Therapy Physics. Year Book Medical Publishers 1981
Johns, H; Cunningham, J.	The Physics of Radiology, 4th Edition, Charles & Thomas 1983
Khan, F.	The Physics of Radiation Therapy, Williams & Wilkins 1984
Lambe, C.	Advanced Level Applied Mathematics, English Universities Press 1970
Mackenheim, A.	Techniques and Physics, Interimages, Luxembourg 1982
Meredith, W; Massey, J.	Fundamental Physics of Radiology, John Wright & Sons, Bristol 1977
National Radiation Laboratory	Code of Safe Practice for the Use of Irradiating Apparatus in Therapy, NRL, 1992 C12
Sanders, D.	Statistics, A Fresh Approach, McGraw Hill 1990
Sternheim, K; & Kane, J.	General Physics, John Wiley 1991
POSTRAD Modules Higher Diploma of the College of Radiographers UK	Therapeutic Radiography) Science & Instrumentation) 1986

15. Behavioural Science I

Reference Number :	HS5104
Date :	November 1992 - revised October 1997
Duration :	60 contact hours and 60 hours of independent learning
CIT Credit Value :	Two (2)
Aim :	To introduce students to the theoretical foundations of psychology and sociology as a basis for the understanding of the factors which influence human behaviour.
Recommended Entry Level :	Entry to programme
Learning Outcomes :	On completion of this module the successful student will be able to :

1. identify the determinants of human behaviour in relation to personality, perception, learning, conditioning and motivation;
2. describe the principles of human development across the lifespan;
3. demonstrate effective verbal and non-verbal communication in a range of contexts;
4. describe the attributes and responsibilities of an effective helper in a health care setting;
5. discuss the psychological consequences of health and illness with an emphasis on cancer;
6. discuss the relevance of culture to an individual's and group's experience of society with particular reference to health and illness;
7. describe the relevance of the Treaty of Waitangi to New Zealand society and the delivery of health care;
8. identify the patterns of inequality which may arise in society with reference to health and illness and the delivery of health care.
9. identify time management skills and strategies

Content

Corresponding to Learning Outcome 1

1. The breadth and scope of psychology and sociology
2. Research methodology commonly used in psychology and sociology
3. Major debates in psychology
4. Theoretical perspectives of personality, learning and conditioning, motivation and perception

Corresponding to Learning Outcome 2

1. Theoretical perspectives of life span development
2. The physical, cognitive and psychosocial changes which occur throughout the life span
3. The implications of the patient's developmental stage for the health worker/ patient relationship

Corresponding to Learning Outcome 3

1. Principles and models of effective verbal and nonverbal communication to demonstrate empathy, affirm, motivate, and educate others
2. Communication and group process
3. Cross cultural communication
4. Management of the environment to facilitate communication
5. Political dimensions of communication
6. Ethical considerations in communication

Corresponding to Learning Outcome 4

1. Attributes of an effective helper
2. Responsibilities of an effective helper

Corresponding to Learning Outcome 5

1. Health and illness as social constructions
2. Psychosocial consequences of health and illness
3. Cancer and its psychosocial consequences

Corresponding to Learning Outcome 6

1. The meaning of "culture"
2. The relevance of culture to individual and group self perception, beliefs and practices
3. Definitions of "biculturalism", "multiculturalism", "subculture", "counterculture"
4. The relevance of culture to New Zealand society
5. Culture, health, illness, and health care delivery
6. Cultural sensitivity in health care delivery

Corresponding to Learning Outcome 7

1. The Treaty of Waitangi and its significance to Maori and Pakeha
2. The relevance of the Treaty of Waitangi to health, illness and health care delivery

Corresponding to Learning Outcome 8

1. Definitions of terms related to inequality, sexism, ageism, racism, prejudice, stereotype, discrimination
2. Systems of inequality based on class, age, gender, race, ethnicity, disability, etc
3. Inequalities in New Zealand society
4. The consequences of inequalities in access to resources, including health for the individual, family and society

Corresponding to Learning Outcome 9

1. Time management strategies
2. Prioritisation

Suggested Learning and Teaching Approaches :

The learning outcomes of this module could be achieved by the following :

- student centred tutorials with an emphasis on class discussion and debate;
- guest speakers who are able to offer current and practical information on topics;
- case studies and problem based learning;
- role plays, with the lecturer and others modelling and coaching appropriate behaviours;
- seminar and project presentations;
- the use of media such as videos, journals, texts, newspaper articles and television will provide a rich source of material for discussion, exploration and debate;
- use of a variety of small scale investigative techniques;
- the teaching material should draw on the student's personal and professional experiences and encourage critical inquiry and examination of the "taken for granted world".

Assessment of Learning Outcomes :

Summative assessment will consist of the following :

• one test	=	10% of total mark
• one test	=	20% of total mark
• oral presentation	=	10% of total mark
• one assignment	=	20% of total mark
• one final 2 hour written examination	=	40% of total mark

50% must be gained in the coursework to be eligible to take the final examination. A pass will be awarded to all students who gain 50% overall.

Reporting Results to Students

Results will be reported to students as follows:

Course work, out of	60
Final examination, out of	40
TOTAL	100

Student result notices will carry grades from A to E.

Resources

Bolstad, R; Hamblett, M; Ohlson, T; Hardie, J;	Communicating Caring : A Guide for Health Workers and Caregivers. Longman Paul, Auckland 1992
Cassileth, B.	The Cancer Patient. Social and Medical Aspects of Care, Lea & Febiger, London 1979
Clarke, A. (ed)	Understanding Cancer. Cancer Society, Wellington 1992
Giddens, A.	Sociology, Polity Press, Cambridge 1989
Hopkins, Kavanagh, K; & Kennedy P.	Promoting Cultural Diversity. Strategies for Health Care Professionals, Sage, London 1992
Kawharu, I.(ed)	Waitangi : Maori and Pakeha Perspectives of the Treaty of Waitangi, Oxford University Press 1989
King, N; Remenyi, A.	Psychology For Health Sciences, Thomas Nelson, Melbourne 1989
Kinloch, P.	Talking Health But Doing Sickness. Studies in Samoan Health, Victoria University Press 1985
Metge, J; Kinloch P.	Talking Past Each Other. Problems of Cross Cultural Communication, Victoria University Press, Wellington 1978
Peterson, C.	Looking Through the Life Span, 2nd Edition, Prentice Hall, New York 1989
Reynolds, T.	Your Cancer Your Life, Greenhouse Publications, Victoria 1987
Schaefer, R.	Sociology, 3rd Edition, McGraw Hill, New York 1989
Weiten, W.	Psychology: Themes and Variations, 3rd Edition, Brooks/Cole 1995

16. Radiation Technology I

Reference Number :	RT5106
Date :	October 1997
Duration :	120 contact hours and 60 hours of independent learning
CIT Credit Value :	Three (3)
Aim :	To introduce students to the basic principles relevant to the use of computers, radiation therapy equipment and radiographic photography.
Recommended Entry Level :	Entry to programme
Learning Outcomes :	On completion of this module the successful student will be able to :

1. demonstrate an understanding of the use of computers and their applications;
2. describe the principles of construction and operation of radiation therapy and imaging equipment;
3. describe the principles of radiation protection and safety;
4. describe the functions and procedures used in radiographic photography;
5. describe the principles of diagnostic imaging methods.

Content

Corresponding to Learning Outcome 1

1. Role of computers
2. Computer hardware and operation
3. Software applications - (Windows, Word processing, Spreadsheets, Databases)
4. Network capabilities
5. Digital processing

Corresponding to Learning Outcome 2

1. Kilovoltage X-ray units
2. Megavoltage X-ray units
3. Gamma ray units
4. Radiation protection and safety issues
5. Differences between imaging and radiation therapy equipment
6. Accessory equipment
7. Care of equipment
8. Electrical safety and power supplies
9. Use of computers in radiation therapy

Corresponding to Learning Outcome 3

1. Radiation protection principles
2. Radiation safety legislation
3. Personnel monitoring
4. Radiation measurement

Corresponding to Learning Outcome 4

1. Photographic process
2. Film construction
3. Intensifying screens
4. X-ray cassettes
5. Photographic chemistry
6. Radiographic image
7. Contrast agents
8. Quality Assurance
9. Storage of x-ray films (unexposed and exposed)

Corresponding to Learning Outcome 5

1. Conventional diagnostic imaging
2. CT Scanning
3. MRI
4. Ultrasound
5. Nuclear medicine imaging
6. Other imaging methods

Suggested Learning and Teaching Approaches :

The learning outcomes of this module could be achieved by the following :

- student centred tutorials with an emphasis on class discussion and debate;
- seminar and project presentations;
- the use of media such as videos, journals, and texts;
- laboratory demonstrations;
- practical sessions.

Assessment of Learning Outcomes :

Summative assessment will consist of the following :

• one test (photography)	=	15% of total mark
• one assignment (photography)	=	5% of total mark
• one test (equipment)	=	15% of total mark
• one test (radiation protection & imaging)	=	15% of total mark
• assignments (equipment, radiation protection & imaging)	=	10% of total mark
• one final 3 hour written examination	=	40% of total mark
• computer assignments	=	Pass / Fail

50% must be gained in the coursework to be eligible to take the final examination.

A pass will be awarded to all students who gain 50% overall and who pass the computer assignments.

Reporting Results to Students

Results will be reported to students as follows:

Course work, out of	60
Final examination, out of	40
TOTAL	100

Student result notices will carry grades from A to E.

Resources

Students have access to a variety of databases and CD Roms

Textbooks

Giancoli. D C	Physics - Principles with Applications (4th Edition). Prentice Hall, USA. 1995.
Ball. J; & Moore. A.	Essential Physics for Radiographers. Blackwell Scientific 1986
Byte Size	Easy Guide to Computing - Series of articles
Chesney. D; & M.	X-ray equipment for student radiographers. Blackwell Scientific 1984
Radiographic Photography.	Blackwell Scientific 1971
Hendee. W.	Radiation Therapy Physics. Year Book Medical Publishers 1981
Jenkins. D.	Radiographic Photography & Imaging. Lancaster MTP 1980
Johns. H; & Cunningham. J.	The Physics of Radiology, 4th Edition. Charles C Thomas 1983
Khan. F.	The Physics of Radiation Therapy. Williams & Wilkins, Baltimore 1984
Klevenhagen. S.	The Physics of Electron Beam Therapy. Adam Hiler in collaboration with the Hospital Physicians Assoc. Bristol 1985
KODAK	The Fundamentals of Radiography. Eastman Kodak Company 1980
Meredith. W; & Massey. J.	Fundamental Physics of Radiology. Springfield 1983
Roberts. D; & Smith. N.	Radiographic Imaging. Churchill Livingstone 1988
Stanton. R; Stinton. D.	An Introduction to Radiation Oncology Physics. Medical Physics Publishing 1992
Taylor. J.	Imaging in Radiotherapy. Groom Helm 1988
Wilks. R.	Principles of Radiological Physics. Churchill Livingstone 1987

17. Radiation Therapy and Oncology I

Reference Number : RT5107

Date : October 1997

Duration : 180 contact hours and 60 hours of independent learning

CIT Credit Value : Four (4)

Aim : To enable students to gain a basic understanding of oncology, and the treatment modalities available to treat malignant disease.

Recommended Entry Level : Entry to programme

Learning Outcomes : On completion of this module the successful student will be able to :

1. describe the pathology of common tumours and the ways in which they are classified;
2. describe the treatment modalities used to treat malignant disease;
3. describe radiation therapy techniques used in the treatment of disease;
4. describe the general principles of radiobiology;
5. discuss the basic care a patient may require when receiving radiation therapy;
6. discuss legal and ethical issues related to radiation therapy and patient care;
7. demonstrate a knowledge of basic calculations used in radiation therapy;
8. demonstrate the basic principles of treatment planning;
9. discuss commonly used mould room techniques.

Content

Corresponding to Learning Outcome 1

1. Malignant tumours
2. Benign tumours treated with radiation therapy
3. Epidemiology
4. Aetiology
5. Classification systems

Corresponding to Learning Outcome 2

1. Surgery
2. Radiation therapy
3. Chemotherapy
4. Hormone therapy
5. Other treatment modalities
6. Principles underlying the choice of treatment

Corresponding to Learning Outcome 3

1. Radical techniques
2. Palliative techniques
3. Pre and post operative techniques
4. Adjuvant techniques

Corresponding to Learning Outcome 4

1. Pathology and kinetics of radiation injury in normal tissues
2. Tumour radiobiology
3. Molecular and cellular aspects of radiobiology
4. Cell survival curves
5. The '4Rs' of radiobiology

Corresponding to Learning Outcome 5

1. Local reactions to radiation therapy
2. Systemic reactions to radiation therapy
3. Blood counts
4. Diet and fluid intake
5. Optimum healing techniques
6. Patient information

Corresponding to Learning Outcome 6

1. Code of Ethics
2. Ethical issues
3. Radiation legislation
4. Department policies
5. Reporting and recroding mechanisms

Corresponding to Learning Outcome 7

1. Calibration conditions
2. Inverse square law
3. Attenuation factors for SSD techniques
4. Manual calculations of basic radiation therapy SSD treatment techniques

Corresponding to Learning Outcome 8

1. Isodose distributions
2. Manual planning principles
3. Computer planning principles
4. Simulation
5. Field verification

Corresponding to Learning Outcome 9

1. Immobilisation devices
2. Tissue compensators
3. Electron cut outs
4. Shielding blocks
5. Bolus

Suggested Learning and Teaching Approaches :

The learning outcomes of this module could be achieved by the following :

- student centred tutorials with an emphasis on class discussion and debate;
- seminar and project presentations;
- the use of media such as videos, journals, texts, newspaper articles and television will provide a rich source of material for discussion, and exploration;
- laboratory demonstrations.

Assessment of Learning Outcomes :

Summative assessment will consist of the following :

- one test = 20% of total mark
- one test = 20% of total mark
- one assignment = 20% of total mark
- one final 3 hour written examination = 40% of total mark

50% must be gained in the coursework to be eligible to take the final examination.
A pass will be awarded to all students who gain 50% overall.

Reporting Results to Students

Results will be reported to students as follows:

Course work, out of:	60
Final examination, out of:	40
TOTAL:	**100**

Student result notices will carry grades from A to E.

Resources

Electronic Media

ONCO-disc: the last 10 years of all articles published, on cancer, in the world; contains the complete textbook by De Vita, staging textbook, treatment protocols for all sites, physician and patient information, PDQ database.

Textbooks

Baird, S. — A Cancer Source Book for Nurses, 6th Edition. American Cancer Society 1991

Blackburns Introduction to Clinical Radiation Therapy, Medical Physics Publishing Co-Op, Madison 1989

Bomford, C; Kunkler, I; Sherriff, S. — Walter & Miller's Textbook of Radiotherapy, 2nd Edition, Churchill Livingstone 1993

Chandler, M. — Behind the Mask. Change Publications. 1988

Coia, L; Moycan, D. — Introduction to Clinical Radiation Oncology, Medical Physics Publishing Co-Op. Madison 1989

College of Radiographers — Process of Patient Care) Oncology) Therapeutic Radiograph) Science and Instrumentation) 1986

Griffiths, S; Short, C. — Radiotherapy : Principles to Practice. Churchill Livingstone 1994

A Guide to Palliative Care in New Zealand. 2nd Edition. Douglas Pharmaceuticals 1992

Murphy, G; Lawrence, W; Lenhard, R. — American Cancer Society Textbook of Clinical Oncology, American Cancer Society 1995

Neal, A. & Hoskin, P. — "Clinical Oncology - Basic Principles and Practice" 2nd Edition. Edward Arnold. 1994

Pitot, H; Shahabi, S. — Fundamentals of Oncology. 2nd Edition, Marcel Dekker Inc. 1981

Wilks, R. — Principles of Radiological Physics. 2nd Edition. Churchill Livingstone 1987

STAGE TWO MODULES

RT6201	Anatomy, Physiology & Pathology II
RT6202	Clinical Studies II
RT6204	Behavioural Science II
HS6205	Principles of Research
RT6206	Radiation Technology II
RT6207	Radiation Therapy and Oncology II

18. Anatomy, Physiology and Pathology II

Reference Number : RT6201

Date : October 1995

Duration : 30 contact hours and 30 hours of independent learning

CIT Credit Value : One (1)

Aim : To enable students to apply their understanding of the anatomy, physiology and pathology of the human body to the diagnosis and treatment of cancer.

Recommended Entry Level: Satisfactory completion of Anatomy, Physiology and Pathology I

Learning Outcomes : On completion of this module the successful student will be able to:

1. explain the structure, function and lymphatic drainage of structures affected by cancer;
2. use knowledge of anatomy to recognise structures on X-ray, CT and MRI scans;
3. demonstrate a basic understanding of pathology seen on X-ray, CT and MRI scans;
4. apply knowledge of surface anatomy to the clinical situation.

Content

Corresponding to Learning Outcome 1

1. Lymphatic drainage in organs and tissues of :
   - head and neck
   - thorax
   - abdomen
   - pelvis
   - upper limbs
   - lower limbs

Corresponding to Learning Outcome 2

1. Diagnostic purpose of X-ray, CT and MRI scans.
2. Representation of anatomical structures visible on X-ray, CT, and MRI scans.

Corresponding to Learning Outcome 3

1. Diagnosis of basic pathological changes seen on X-ray, CT and MRI scans.

Corresponding to Learning Outcome 4

1. Clinical significance of main landmarks and planes of :
   - head
   - thorax
   - abdomen
   - extremities

Suggested Learning and Teaching Approaches :

The learning outcomes of this module could be achieved by the following :

- student centred tutorials with an emphasis on class discussion;
- seminar and project presentations;
- the use of media such as videos, journals, texts, newspaper articles and television will provide a rich source of material for discussion, and exploration;
- laboratory demonstrations.

Assessment of Learning Outcomes :

Summative assessment will consist of the following :

- one presentation = 40% of total mark
- one test = 60% of total mark

A pass will be awarded to all students who gain 50% overall.

Reporting Results to Students

Results will be reported to students as follows:

Course work, out of 100

Student result notices will carry grades from A to E.

Resources

Electronic Media

CD ROM	Whole Body Computed Tomography, Blackwell Science, 1995
CD ROM	Radiological Anatomy

Textbooks

Van Wynsberghe, D; Norback, C R & Carola R.	Human Anatomy & Physiology (3rd Edition) McGraw Hill, New York, 1995.
Backhouse, K; Hutchings,R.	A Colour Atlas of Surface Anatomy, Wolfe, 1986
Brehm, B.	Essays on Wellness, Harper Collins 1993
Carter et al	Cross Sectional Anatomy, CT and Ultrasound Correlation, Prentice Hall 1977
Cohen, B.	Medical Terminology, J B Lippincott Company 1989
Donnelly, P; Wistreich G.	Human Body, Harper & Row, 1989
Lumley, J.	Surface Anatomy, Churchill Livingstone 1990
Mallone, K; Schneider, J.	Human Anatomy & Physiology Workbook, 2nd Edition, Harper Collins 1991
Martini, F.	Fundamentals of Anatomy and Physiology, 3rd Edition, Prentice Hall 1995 - Test Item File - Study Guide - Applications Manual - Computer Tutorial
Ross, J; Wilson, K.	Anatomy & Physiology in Health and Illness; 7th Edition, Churchill Livingstone 1992
Royal College of Surgeons of Edinburgh	A colour Atlas of Demonstrations in Surgical Pathology (Volume 1 & 2), Wolfe 1983
Spence, A; Mason, E.	Human Anatomy and Physiology, 4th Edition, West Publishing Company 1984
Taylor, A.	Atlas of Radiologic Anatomy, 4th Edition, Munich-Baltimore 1987
Tortora, G;	Principles of Anatomy & Physiology, 7th Edition, Harper Collins 1992
Instructors Manual,	7th Edition, Harper Collins 1993
Concept Maps,	Harper Collins 1993
Tranel, L; Mills, A.	Instructors Resource Guide, Prentice Hall 1995
Westbrooke & Watson	MRI in Practice, Blackwell Science 1993

Dorlands Illustrated Medical Dictionary, 27th Edition, W B Saunders 1988

19. Clinical Studies II

Reference Number :	RT6202
Date :	October 1995
Duration :	400 contact hours and 370 hours of independent learning
CIT Credit Value :	Ten (10)
Aim :	The student will gain skills and knowledge which will enable them to carry out the basic skills of a radiation therapist under supervision.
Recommended Entry Level :	Successful completion of all Stage I courses.
Learning Outcomes :	On completion of this module the successful student will be able to :

1. demonstrate safe practices when working with patients and equipment;
2. demonstrate the application of routine radiation therapy techniques;
3. communicate information accurately and effectively;
4. recognise patients' needs and/or significant changes in patients' condition;
5. establish appropriate rapport within the workplace;
6. identify the key elements of teamwork with reference to the health care setting;
7. discuss methods of quality assurance in radiation therapy;
8. demonstrate appropriate self-management techniques.

Content

Corresponding to Learning Outcome 1

1. Potential hazards in a radiation therapy department
2. Safety regulations and procedures
3. Equipment faults
4. Patient safety and comfort

Corresponding to Learning Outcome 2

1. Palliative techniques to include: single field, chest, brain and bone
2. Radical pelvic techniques to include: cervix/uterus, bladder, rectum, prostate larynx, brain, pituitary, testis techniques

Corresponding to Learning Outcome 3

1. Written records and reports
2. Verbal reporting
3. Verification of information

Corresponding to Learning Outcome 4

1. Physical, social and emotional needs of patients
2. Normal range of responses to treatment
3. Indicators for reassessing patient condition
4. Appropriate referrals

Corresponding to Learning Outcome 5

1. Verbal and non-verbal communication skills
2. Cross-cultural communication

Corresponding to Learning Outcome 6

1. Roles of healthcare team members
2. Channels of communication
3. Sources of conflict in teams
4. Conflict resolution skills

Corresponding to Learning Outcome 7

1. Importance of quality assurance in a radiation therapy department
2. Clinical quality assurance

Corresponding to Learning Outcome 8

1. Occupational stress
2. The range of emotional responses radiation therapists may have when working with patients and colleagues
3. Appropriate coping strategies
4. Time management skills

Suggested Learning and Teaching Approaches :

The learning outcomes of this module could be achieved by the following :

- student centred tutorials with an emphasis on class discussion;
- seminar and project presentations;
- the use of media such as videos, journals, texts, newspaper articles and television will provide a rich source of material for discussion, exploration;
- use of a variety of small scale investigative techniques;
- clinically based practice.
- visit to another radiation therapy department

Assessment of Learning Outcomes :

Summative assessment will consist of the following :

- one practical assessment (treatment) = Pass/Fail
- one practical assessment (planning) = Pass/Fail
- one clinical journal = Pass/Fail

A pass will be awarded to all students who gain a pass in <u>each</u> component.

Reporting Results to Students

Results will be reported to students as Pass/Fail

Students will normally be required to retake all assessment components in a repeat enrolment.

Resources

Fully equipped and operational radiation therapy department.

Bomford, C; Kunkler, I; Sherriff, S.	Walter & Miller's Textbook of Radiotherapy, 2nd Edition, Churchill Livingstone 1993
Dowd, S.	Practical Radiation Protection and Applied Radiobiology, W B Saunders Company 1994
Lau, L; Campo, J.	Radiological Diagnosis, Holt-Saunders 1985
Murphy, G; Lawrence, W; Lenhard, R.	American Cancer Society Textbook of Clinical Oncology. American Cancer Society 1995
Osten, R; Shahabi, S.	Cancer Manual, 8th Edition, American Cancer Society 1990

Blackburns Introduction to Clinical Radiation Therapy, Medical Physics Publishing Co-op, Madison 1989

20. Behavioural Science II

Reference Number : RT6204

Date : October 1995

Duration : 30 contact hours and 30 hours of independent learning

CIT Credit Value : One (1)

Aim : To enable the student to apply theoretical perspectives from psychology and sociology to their role as a radiation therapist.

Recommended Entry Level : Satisfactory completion of Behavioural Science I

Learning Outcomes : On completion of this module the successful student will be able to :

1. distinguish factors which are likely to influence the perception of pain and relate these to the role of the radiation therapist;
2. discuss the psychosocial consequences of terminal illness for the individual and the family;
3. demonstrate appropriate responses to individuals and family members who are coping with terminal illness;
4. determine the causes and effects of stress on the human organism and ways in which stress can be managed;
5. describe appropriate strategies for dealing with burnout in the workplace;

Content

Corresponding to Learning Outcome 1

1. Culture, age, gender, psychosocial factors which influence the perception of pain.
2. Strategies to facilitate the identification of pain in the radiation therapy setting.
3. Strategies to assist patients cope with pain.

Corresponding to Learning Outcome 2

1. Terminal illness and models of grieving.
2. Psychosocial consequences of terminal illness for the individual and family.

Corresponding to Learning Outcome 3

1. Identification of grief responses in self and others.
2. Appropriate responses to grieving individuals.
3. Cross cultural differences in coping with hospitalisation, illness and terminal illness.
4. Counselling as a helping tool.
5. Identification of support systems for patients receiving radiation therapy.

Corresponding to Learning Outcome 4

1. Definitions of terminology, "stress", "stressor"
2. Origins of stressors
3. Consequences of stress, cognitive, emotional, physical, behavioural
4. Positive and negative coping mechanisms
5. Strategies to prevent or minimise the effects of stress

Corresponding to Learning Outcome 5

1. Definitions of burnout.
2. Causes of burnout in a health care setting.
3. Consequences of burnout.
4. Strategies for dealing with burnout.

Suggested Learning and Teaching Approaches :

The learning outcomes of this module could be achieved by the following :

- student centred tutorials with an emphasis on class discussion and debate;
- guest speakers who are able to offer current and practical information on topics;
- case studies and problem based learning;
- role plays, with the lecturer and others modelling and coaching appropriate behaviours;
- seminar and project presentations;
- the use of media such as videos, journals, texts, newspaper articles and television will provide a rich source of material for discussion, exploration and debate;
- use of a variety of small scale investigative techniques;
- the teaching material should draw on the student's personal and professional experiences and encourage critical inquiry and examination of the "taken for granted world".

Assessment of Learning Outcomes :

Summative assessment will consist of the following :

- one project = 50% of total mark
- one test = 50% of total mark

A pass will be awarded to all students who gain 50% overall.

Reporting Results to Students

Results will be reported to students as follows:

Course work, out of 100

Student result notices will carry grades from A to E.

Resources

Weiten, W	Psychology: Themes and Variations (4th Edition). Brooks Cole, 1998.
Applebaum, S.	Stress Management for Healthcare Professionals, Aspen, Maryland 1981
Gatchel, R; Baum, A; Krantz, D.	An Introduction to Health Psychology, 2nd Edition, McGraw Hill, New York 1989
Hamilton, J; Kiefer, M;	Survival Skills for the New Nurse, J B Lippincott, London 1986
Penson, J; Fisher, R. (eds)	Palliative Care for People with Cancer, Edward Arnold 1991
Sarafino, G.	Health Psychology: Biopsychosocial Interactions, 2nd Edition, New York 1994
Staudacher, C.	Beyond Grief. A Guide for Recovering from the Death of a Loved One. Souvenir Press, London 1987
Steptoe, A; Wardle,J. (eds)	Psychosocial Processes and Health. A Reader. Cambridge University Press, Cambridge 1994
Williams, G.	Help Me, I'm Dying. A Handbook for those caring for the terminally ill at home. Longman Paul, Auckland 1989
Worden, J.	Grief Counselling and Grief Therapy. A Handbook for the Mental Health Practitioner. Springer, New York 1982

21. Principles of Research

Reference Number :	HS6205
Date :	November 1992 - revised October 1995
Duration :	30 contact hours 30 hours of independent learning
CIT Credit Value :	One (1)
Aim :	The student will gain a working knowledge of basic research methodology; they will also gain basic skills in critical analysis to enable them to evaluate research findings.
Recommended Entry Level :	Entry to programme
Learning Outcomes :	On completion of this module the successful student will be able to:

1. analyse research methodology including the use of information technology and identify the research processes involved;
2. critically appraise scientific papers and give a clear and rational interpretation of the material in a literature review;
3. document the history of research ethics and informed consent;
4. explain the importance of mathematical measurements and statistical analysis in research;
5. assess the importance of research to the professional field of practice;

Content

Corresponding to Learning Outcome 1

1. Making sense of professional papers
2. Hypotheses, research questions, null hypotheses
3. Confidence levels, statistical inferences, linear correlation coefficient and tests of significance, linear regression, interpretation of distributions.

Corresponding to Learning Outcome 2

1. Developing databases and referencing systems
2. Analysis of authors' methods, results and discussions, synthesizing information from a variety of sources
3. Report writing to a professional standard

Corresponding to Learning Outcome 3

1. Informed consent and the ethics of research
2. Data gathering, use of existing information, interviews, observation techniques (participant and non-participant observation)
3. Bias, validity, reliability, repeatability, questionnaire design, experimental design
4. Combined methods of data gathering, data analysis, double blind trials, placebos

Corresponding to Learning Outcome 4

1. Population and samples, sample criteria, large and small sample theory
2. Significance testing, variables and control of variables - placebos, double blind trials, sources of error, statistical hypotheses, student t-test

Corresponding to Learning Outcome 5

1. Considering the effects of applied research to medicine
2. History of research in radiation therapy research culture and written traditions of radiation therapy

Suggested Learning and Teaching Approaches :

- A number of papers should be given to students to allow them to practise evaluating them. Check lists and group discussions can be used to allow the students to question the findings of articles.

Assessment of Learning Outcomes :

Summative assessment will consist of the following :

- one assignment (research) = Pass/Fail
- one assignment (statistics) = Pass/Fail

A pass will be awarded to all students who gain a pass in **each** component.

Reporting Results to Students

Results will be reported to students as Pass/Fail

Resources

Currier, D.	Elements of Research in Physical Therapy, 3rd Edition, Williams and Wilkins, 1990
Fletcher, R; Fletcher, S; Wagner, E.	Clinical Epidemiology, 2nd Edition, Williams and Wilkins 1987
Gilbert, N.(ed)	Researching Social Life, Sage, London 1993
Hulley, S; Cummings S.	Designing Clinical Research : An Epidemiological Approach, Williams and Wilkins 1988
Kellehear, A.	The Unobtrusive Researcher : A Guide to Methods, Allen & Unwin, St Leonards, NSW 1993
Marshall C; Rossman G.	Designing Qualitative Research, Sage, London 1989
Moore, D; McCabe, G.	Introduction to the Practice of Statistics, 2nd Edition, Freeman, NY 1994
Ottenbacher, K.	Evaluating Clinical Change, Williams and Wilkins 1986
Polgar, S.	Introduction to Research in Health Sciences, 2nd Edition, Churchill Livingstone, 1991

22. Radiation Technology II

Reference Number : RT6206

Date : October 1995

Duration : 100 contact hours and 80 hours of independent learning

CIT Credit Value : Three (3)

Aim To enable students to apply their understanding of computers, radiation therapy equipment and radiographic photography to the planning and delivery of radiation therapy.

Recommended Entry Level : Successful completion of Radiation Technology I and Radiation Physics

Learning Outcomes : On completion of this module the successful student will be able to :

1. use a range of computer programmes relevant to radiation therapy;
2. describe the role of the different types of radiation for use in radiation therapy;
3. describe radiation detection and measurement;
4. apply the principles of radiation protection and safety;
5. discuss the use of radiation therapy equipment;
6. explain the use of brachytherapy in radiation therapy;
7. describe the use of specialised radiation therapy techniques;
8. describe the principles of quality assurance in relation to the use of radiation technology.
9. describe computed tomography (CT) as a treatment planning tool.

Content

Corresponding to Learning Outcome 1

1. Radiation therapy software usage
2. Optimal planning procedures
3. Recording and verification systems

Corresponding to Learning Outcome 2

1. Photons
2. Electrons
3. Other particles

Corresponding to Learning Outcome 3

1. Radiation detectors
2. Radiation measurement
3. Machine calibration

Corresponding to Learning Outcome 4

1. Radiation protection and safety equipment checking procedures
2. Protection and safety reporting procedures
3. Fault identification
4. Radiation monitoring

Corresponding to Learning Outcome 5

1. Kilovoltage X-ray units
2. Megavoltage X-ray units
3. Gamma ray units including remote afterloading
4. Simulators
5. Accessory equipment
6. Care of equipment

Corresponding to Learning Outcome 6

1. Sealed sources
2. Unsealed sources
3. Safety procedures

Corresponding to Learning Outcome 7

1. Total body irradiation
2. Stereotactic techniques
3. Multileaf collimators
4. Electronic portal imaging

Corresponding to Learning Outcome 8

1. Principles of quality assurance
2. Systems of quality assurance
3. Rationale for quality assurance

Corresponding to Learning Outcome 9

1. Evolution of CT
2. Codes of Practice
3. Practical applications
4. Image interpretation

Suggested Learning and Teaching Approaches :

The learning outcomes of this module could be achieved by the following :

- student centred tutorials with an emphasis on class discussion and debate;
- seminar and project presentations;
- the use of media such as videos, journals and texts;
- laboratory demonstrations;
- practical sessions.

Assessment of Learning Outcomes :

Summative assessment will consist of the following :

- one theory test (LO 7&9) = 30% of total mark
- three assignments at 10% each = 30% of total mark
- one final 3 hour written examination = 40% of total mark

50% must be gained in the coursework to be eligible to take the final exam.
A pass will be awarded to all students who gain 50% overall.

Reporting Results to Students

Results will be reported to students as follows:

Course work, out of	60
Final examination, out of	40
TOTAL	100

Student result notices will carry grades from A to E.

Resources

Electronic Media :

Students have access to a variety of data bases and CD Roms.

Textbooks

Stanton, R; Stinton D.	Applied Physics for Radiation Oncology (2nd Edition). Medical Physics Publishing, Wisconsin, USA, 1996.
Ball, J; & Moore, D.	Essential Physics for Radiographers, Blackwell Scientific 1986
Bushong, S.	Radiologic Science for Technologists - Physics, Biology and Protection, Mosby 1993
Byte Size	Easy Guide to Computing - Series of articles
Chesney, D; & M.	X-ray Equipment for Student Radiographers, Blackwell Scientific 1984
	Radiographic Photography, Blackwell Scientific, 1971
Dowd, S; Steven B	Practical Radiation Protection & Applied Radiobiology, W B Saunders Company 1994
Hendee, W	Radiation Therapy Physics, Year Book Medical Publishers 1981
Jenkins, D.	Radiographic Photography & Imaging, Lancaster MTP 1980
Johns, H; & Cunningham, J.	The Physics of Radiology, Springfield 1983
Karzmark, C.	Theory of Operation of Linear Accelerators in Radiation Therapy, US Dept of Health and Human Services 1982
Khan, F; Stamathis, G.	The Physics of Radiation Therapy, Williams & Wilkins Baltimore 1984
Klevenhagen, S.	The Physics of Electron Beam Therapy, Adam Hiler in collaboration with the Hospital Physicians Assoc. Bristol 1985
KODAK	The Fundamentals of Radiography, Eastman Kodak Company 1980
Meredith, W; & Massey, J.	Fundamental Physics of Radiology, John Wright & Sons Ltd, Bristol 1977
Nag, S.	Textbook on High Dose Rate Brachytherpy, Blackwell Science 1994
	National Radiation Code of safe practice for the use of irradiating apparatus in medical Laboratory Therapy, NRL 1992
Roberts, D; & Smith, N.	Radiographic Imaging, Churchill Livingstone 1988
Khan, F.	The Physics of Radiation Therapy, Williams & Wilkins 1984
Taylor, J.	Imaging in Radiotherapy, Groom Helm 1988
Wilks, R.	Principles of Radiological Physics, Churchill Livingstone 1987

23. Radiation Therapy and Oncology II

Reference Number :	RT6207
Date :	October 1995
Duration :	140 contact hours and 100 hours of independent learning
CIT Credit Value :	Four (4)
Aim :	To enable the student to integrate their knowledge of oncology and treatment modalities to determine optimal treatment for malignant disease.
Recommended Entry Level :	Successful completion of Radiation Therapy and Oncology I
Learning Outcomes :	On completion of this module the successful student will be able to :

1. describe the pharmacological approach to patient care during radiation therapy;
2. identify the role of chemotherapy for patients with malignant disease;
3. discuss the clinical rationale for selecting appropriate treatment for malignant and benign disease;
4. demonstrate commonly used mould room immobilising techniques;
5. demonstrate the basic principles of treatment planning and dose calculation;
6. discuss the effects of radiation on biological systems.

Content

Corresponding to Learning Outcome 1

1. Pharmacological principles
2. Adverse reactions to drugs
3. Medications used for radiation therapy reactions

Corresponding to Learning Outcome 2

1. Principles of chemotherapy for cancer
2. Classification of chemotherapy drugs
3. Side effects of chemotherapy
4. Management of side effects

Corresponding to Learning Outcome 3

1. Patient assessment methods
2. Tumour characteristics
3. Optimal treatment techniques
4. Combined modality treatments
5. Typical treatment reactions

Corresponding to Learning Outcome 4

1. Reasons for use of mould room devices
2. Principles and methods of construction

Corresponding to Learning Outcome 5

1. Basic planning techniques
2. Tumour localisation
3. Radiographic interpretation
4. Contouring methods
5. Manual calculations for basic SSD and SAD treatment techniques
6. Factors affecting dosage

Corresponding to Learning Outcome 6

1. Radiation chemistry
2. Mammalian cell sensitivity
3. Physical modification of radiation exposure
4. Acute radiation syndrome
5. Late effects of radiation

Suggested Learning and Teaching Approaches :

The learning outcomes of this module could be achieved by the following :

- student centred tutorials with an emphasis on class discussion and debate;
- seminar and project presentations;
- the use of media such as videos, journals, texts, newspaper articles and television will provide a rich source of material for discussion, and exploration;
- laboratory demonstrations.

Assessment of Learning Outcomes :

Summative assessment will consist of the following :

- One test (radiobiology) = 20% of total mark
- One test = 20% of total mark
- One practical assignment = 20% of total mark
- One final 3 hour written examination = 40% of total mark

50% must be gained in the coursework to be eligible to take the final examination.
A pass will be awarded to those students who gain 50% overall

Reporting Results to Students

Results will be reported to students as follows:

Course work, out of	60
Final examination, out of	40
TOTAL	100

Student result notices will carry grades from A to E.

Resources

Electronic Media

Students have access to a variety of data bases and CD Roms

Textbooks

Dobbs, J; Barrett, A; Ash, D.	Practical Radiotherapy Planning (2nd Edition) Edward Arnold, London, 1994.	
Beal, A & Hoskin, P.	Clinical Oncology: A Textbook for Students. Edward Arnols, London, 1994.	
Bentel, G; Nelson, C; Noell, K	Treatment Planning and Dose Calculation in Radiation Oncology, Pergamon Press 1989	
Bomford, C; Kunkler, I; Sherriff, S.	Textbook of Radiotherapy, 2nd Edition, Churchill Livingstone 1993	
POSTRAD Modules Higher Diploma of College of Radiographers	Process of Patient Care) Oncology) Therapeutic Radiography) Science and Instrumentation)	1986
Dobbs, J; Barrett, A.	Practical Radiotherapy Planning, Edward Arnold 1988	
Dowd, S.	Practical Radiation Protection and Applied Radiobiology, W B Saunders Company 1994	
Greening, J.	Fundamentals of Radiation Dosimetry, Medical Handbooks 6, Adam Hilger Ltd 1981	
Griffiths, S; Short, C.	Radiotherapy : Principles to Practice, Churchill Livingstone 1994	

A Guide to Palliative Care in New Zealand, 2nd Edition, Douglas Pharmaceuticals 1992

Haskell, C.	Cancer Treatment. W B Saunders Company 1980
Moss, W; Brand, W; Battifora, H.	Radiation Oncology - Rationale, Technique, Results, 5th Edition, The C V Mosby Company 1979
Mould, R.	Radiotherapy Treatment Planning, Medical Physics Handboooks 7, Adam Hilger Ltd 1981
Murphy, G; Lawrence, W. Lenhard, R.	American Cancer Society Textbook of Clinical Oncology, American Cancer Society 1995
	National Radiation Code of Safe Practice for the Use of Irradiating Apparatus in Medical Laboratory Therapy, NRL 1992

STAGE THREE MODULES

RT7302	Clinical Studies III
RT7304	Behavioural Science III
HS7305	Applied Research Methodology
RT7306	Radiation Technology III
RT7307	Radiation Therapy and Oncology III
RT7308	Work Experience

24. Clinical Studies III

Reference Number :	RT7302
Date :	October 1995
Duration :	400 contact hours and 335 hours independent learning
CIT Credit Value :	Ten (10)
Aim :	The student will demonstrate their ability to effectively carry out the duties of a radiation therapist, taking responsibility for their actions while still being under the supervision of a qualified radiation therapist.
Recommended Entry Level :	Successful completion of all Stage II courses.
Learning Outcomes :	On completion of this module the successful student will be able to :

1. demonstrate the application of a range of radiation therapy techniques with minimal supervision;
2. demonstrate safe practice and optimal patient care
3. demonstrate the ability to problem solve in the clinical setting;
4. evaluate the need for quality assurance in radiation therapy;
5. analyse the resource implications of managing an oncology department;
6. demonstrate an understanding of pharmaceuticals used in oncology.

Content

Corresponding to Learning Outcome 1

1. A range of radical radiation therapy techniques applied to :
   - head
   - thorax
   - abdomen
   - extremities
   - systemic
   - endocrine
   - breast

Corresponding to Learning Outcome 2

1. Demonstrates safe practices and optimal patient care
2. Communicates information accurately and effectively
3. Recognises patient needs and/or significant changes in patient condition

Corresponding to Learning Outcome 3

1. Identification of problems in clinical setting
2. Problem solving techniques in clinical setting
3. Evaluation of problem solving outcomes

Corresponding to Learning Outcome 4

1. Quality assurance principles, eg TQM, CQI
2. Quality assurance assessment methods
3. Outcomes of quality assurance

Corresponding to Learning Outcome 5

1. Human resource management
2. Financial resource management
3. Time management
4. Equipment/plant/stock/management

Corresponding to Learning Outcome 6

1. Chemotherapy
2. Analgesics
3. Other routine medications used in radiation therapy department
4. Radiosensitisers/radioprotectors
5. Adjuvant chemotherapy and radiation therapy

Suggested Learning and Teaching Approaches :

The learning outcomes of this module could be achieved by the following :

- clinically based practice;
- visit to another radiation therapy department;
- student centred tutorials with an emphasis on class discussion;
- seminar and project presentations;
- the use of media such as videos, journals, texts, newspaper articles and television will provide a rich source of material for discussion, exploration;
- use of a variety of small scale investigative techniques.

Assessment of Learning Outcomes :

Summative assessment will consist of the following :

- one clinical journal = Pass/Fail
- one practical assessment (treatment) = Pass/Fail
- one practical assessment (planning) = Pass/Fail
- one competency based assessment (CBA) = Pass/Fail

A pass will be awarded to all students who gain a pass in <u>each</u> component.

CBA Eligibility

- Students will need to have a current approved comprehensive First Aid Certificate before being admitted into the CBA.
- Students will need to have completed a minimum of 2180 clinical hours (clinical studies plus work experience) to be admitted into the competency based assessment.
- Students will need to have passed all other components of the BHSc(RT) including the Clinical Journal and final practical assessments before being admitted into the CBA

Students will normally be required to retake all assessment components in a repeat enrolment.

Reporting Results to Students

Results will be reported to students as Pass/Fail

Resources

Fully equipped and operational radiation therapy department.

Baird, S.	A Cancer Source Book for Nurses, 6th Edition, American Cancer Society 1991
Bentel, G; Nelson, C; Noell, K.	Treatment Planning and Dose Calculation in Radiation Oncology, Pergamon Press 1989
Bomford, C; Kunkler, I; Sherriff, S.	Walter & Miller's Textbook of Radiotherapy, 2nd Edition, Churchill Livingstone 1993
Dobbs, J; Barrett, A.	Practical Radiotherapy Planning, Edward Arnold 1988
Dowd, S.	Practical Radiation Protection and Applied Radiobiology, W B Saunders Company 1994
Lau, L; Campo, J	Radiological Diagnosis, Holt-Saunders 1985
Mould, R.	Radiotherapy Treatment Planning, 2nd Edition, (Medical Physics Handbook 14), Adam Hilger Ltd 1985
Griffiths, S; Short, C.	Radiotherapy : Principles to Practice. Churchill Livingstone 1994
Murphy, G; Lawrence, W; Lenhard R;	American Cancer Society Textbook of Clinical Oncology. American Cancer Society 1995
Osten, R; Shahabi, S.	Cancer Manual, 8th Edition, American Cancer Society 1990
	Blackburns Introduction to Clinical Radiation Therapy, Medical Physics Publishing Co-op, Madison 1989
Strackee, J.	On-Line Acquisition and Analysis of Portal Images, Harm Meertens 1989

New Ethical Catalogue 1994

25. Behavioural Science III

Reference Number :	RT7304
Date :	October 1995
Duration :	30 contact hours and 30 hours of independent learning
CIT Credit Value :	One (1)
Aim :	To enable the student to critically analyse the role of the radiation therapist in the health care context as a basis for managing their personal responses to their role and influencing the quality of care provided to patients.
Recommended Entry Level :	Satisfactory completion of Behavioural Science II
Learning Outcomes :	On completion of this module the successful student will be able to :

1. determine appropriate personal and group management techniques for a range of situations in radiation therapy;
2. demonstrate conflict resolution strategies appropriate to the radiation therapy context;
3. determine a personally and professionally acceptable version of the role of a Radiation Therapist and to be able to integrate this professional role into all their other life roles;
4. consider issues relevant to future professional development and career planning

Content

Corresponding to Learning Outcome 1

1. Personal management strategies
2. Group/team dynamics and roles of participants
3. Managing group process
4. Management/leadership styles
5. Problem solving and management

Corresponding to Learning Outcome 2

1. Common sources of conflict.
2. Sources of conflict in a health care setting.
3. Strategies for dealing with conflict

Corresponding to Learning Outcome 3

1. Personal management strategies
2. Professional socialisation

Corresponding to Learning Outcome 4

1. Issues relevant to future professional development and career planning - CVs, letters of application, interview skills

Suggested Learning and Teaching Approaches :

The learning outcomes of this module could be achieved by the following :

- student centred tutorials with an emphasis on class discussion and debate;
- guest speakers who are able to offer current and practical information on topics;
- case studies and problem based learning;
- role plays, with the lecturer and others modelling and coaching appropriate behaviours;
- seminar and project presentations;
- the use of media such as videos, journals, texts, newspaper articles and television will provide a rich source of material for discussion, exploration and debate;
- use of a variety of small scale investigative techniques;
- the teaching material should draw on the student's personal and professional experiences and encourage critical inquiry and examination of the "taken for granted world".

Assessment of Learning Outcomes :

Summative assessment will consist of the following :

- one test = 60% of total mark
- one presentation = 40% of total mark

A pass will be awarded to all students who gain 50% overall.

Reporting Results to Students

Results will be reported to students as follows:

Course work, out of 100

Student result notices will carry grades from A to E.

Recommended Text

Northouse, L.L; Northouse, P.G. Health Communication (3rd Edition) Appelton & Hall, USA 1998

Resources

Hamilton, J; Kiefer, M.	Survival Skills for The New Nurse. J B Lippincott, London 1986
Health Benefits Review	Report : Choices for Health Care. Wellington 1986
Medical Radiation Technologists Board	Code of Ethics
National Advisory Committee on Core Health Services & Disability Support	Third Report: Core Services for 1995/96, Wellington 1994
New Zealand Institute of Medical Radiation Technology	Code of Ethics
Legislation	The Privacy Act 1993 Code of Health Information The Health and Disability Commissioners Act 1994 Human Rights

26. Applied Research Methodology

Reference Number :	HS7305
Date :	November 1998
Duration :	60 contact hours and 60 hours of independent learning
CIT Credit Value :	Two (2)
Aim :	To enable students to demonstrate their abilities to apply knowledge of research, design and analysis to a topic of their choice.
Recommended Entry Level :	Satisfactory completion of HS6205 Principles of Research
Learning Outcomes :	On completion of this module the successful student will be able to :

1. demonstrate skills of research design;
2. critically evaluate research design in clinical, epidemiological and social science research particularly in relation to radiation therapy;
3. identify the appropriate protocol for writing up and publishing research and for applying for research funding.
4. produce a research project following specific guidelines and procedures commensurate with degree level studies.

Content

Corresponding to Learning Outcome 1

1. Design of research protocols
2. Ethical considerations in design

Corresponding to Learning Outcome 2

1. Critical analysis of clinical, epidemiological and social science research related to radiation therapy

Corresponding to Learning Outcome 3

1. Research paper presentation.
2. Publishing criteria.
3. Application for research funding.

Corresponding to Learning Outcome 4

1. Production of research project.

Suggested Learning and Teaching Approaches :

The learning outcomes of this module could be achieved by the following :

- student centred tutorials with an emphasis on class discussion and debate;
- guest speakers who are able to offer current and practical information on topics;
- seminar and project presentations;
- use of a variety of small scale investigative techniques.

Assessment of Learning Outcomes :

Summative assessment will consist of the following :

- one project = pass/fail

A pass will be awarded to those students who gain an A, B or C grade

Reporting Results to Students

Results will be reported to students as

A B C	pass grades
D E	fail grades

Resources

Benn, K., Benn, C.	(1997). *Writing a Thesis or Long Document Using a Word Proceesor ; A Practical Guide.* The Dunmore Press, New Zealand
Currier, D.	(1990). *Elements of research in Physical Therapy.* (3rd Edition). Williams & Wilkins.
Fletcher, R., Fletcher, S. Wagner. E.	(1987). *Clinical Epidemiology.* (2nd Edition). Williams and Wilkins
Gilbert, N.(ed)	(1993). *Researching Social Life.* Sage, London
Hulley, S. Cummings, S.	(1988). *Designing Clinical Research : An Epidemiological Approach.* Williams and Wilkins
Kellehear, A.	(1993). *The Unobtrusive Researcher: A Guide to Methods.* Allen & Unwin, St Leonards.
Marshall, C., Rossman, G.	(1989). *Designing Qualitative Research.* (Sage, London
Ottenbacher, K.	(1986). *Evaluating Clinical Change.* Williams and Wilkins.
Preece, R.	(1994). *Starting Research.* Pinter, London
Reid, N.	(1993). *Health Care Research by Degrees.* Blackwell, Oxford
Rudestain, K.	(1992). *Surviving Your Dissertation: A Comprehensive Guide to Content and Process.* Sage, London
Polgar, S., & Thomas, S.	(2000). *Introduction to Research in the Health Sciences* (4th Edition)

27. Radiation Technology III

Reference Number :	RT 7306
Date :	November 1998
Duration :	90 contact hours and 90 hours of independent learning
CIT Credit Value :	Three (3)
Aim :	To enable students to use radiation therapy equipment safely and effectively with minimal supervision.
Recommended Entry Level :	Successful completion of Radiation Technology II
Learning Outcomes :	On completion of this module the successful student will be able to:

1. evaluate the suitability of radiation therapy equipment for different clinical situations;
2. discuss the potential future developments of radiation therapy equipment;
3. evaluate the use of brachytherapy equipment in radiation therapy;
4. demonstrate the skills of resource management in relation to a radiation therapy department;
5. critically analyse quality assurance systems in radiation therapy;
6. discuss the principles of planning and treatment in specialised techniques.
7. evaluate Computed Tomography (CT) as a treatment planning tool.

Content

Corresponding to Learning Outcome 1

1. Equipment currently available
2. Future equipment development
3. Cost analysis
4. Clinical analysis
5. Clinical resource management

Corresponding to Learning Outcome 2

1. Future technological trends
2. Computer networking
3. Information resources

Corresponding to Learning Outcome 3

1. Manual systems
2. Remote loading systems
3. High dose rate and low dose rate

Corresponding to Learning Outcome 4

1. Cost analysis
2. Service contracts
3. Availability of resources
4. Strategic planning and service planning
5. Human resource management
6. Problem solving

Corresponding to Learning Outcome 5

1. Evaluation methods
2. Implementing quality improvements

Corresponding to Learning Outcome 6

1. Arc and rotational techniques
2. Stereotactic techniques
3. Specialist techniques
4. Current trends and developments

Corresponding to Learning Outcome 7

1. Operational parameters
2. Image interpretation
3. Role of CT in treatment planning
4. Simulators with CT options
5. CT as a simulation tool

Suggested Learning and Teaching Approaches :

The learning outcomes of this module could be achieved by the following :

- student centred tutorials with an emphasis on class discussion and debate;
- seminar and project presentations;
- the use of media such as videos, journals, and texts;
- practical sessions.

Assessment of Learning Outcomes :

Summative assessment will consist of the following :

- three practical assignments at 20% each = 60% of total mark
- one final 3 hour written examination = 40% of total mark

50% must be gained in coursework to be eligible to take the final exam.
A pass will be awarded to all students who gain 50% overall.

Reporting Results to Students

Results will be reported to students as follows:

Course work, out of	60
Final examination, out of	40
TOTAL	100

Student result notices will carry grades from A to E.

Resources

Electronic Media :

Students have access to a variety of data bases and CD Roms

Textbooks

Dobbs, J; Barrett, A; Ash, D.	Practical Radiotherapy Planning (2nd Edition) Edward Arnold. London. 1994.
Stanton, R & Stinson, D.	Applied Physics for Radiation Oncology (2nd Edition). Medical Physics Publishing. Wisconsin. USA. 1996.
Bushong, S	Radiologic Science for Technologists. Physics Biology and Protection. Mosby 1993
Griffiths, S; Short, C	Radiotherapy : Principles to Practice. Churchill Livingstone 1994
Nag, S.	Textbook on High Dose Rate Brachytherapy. Blackwell Science 1994
Webb, S.	The Physics of Three Dimensional Radiation Therapy. Institute of Physics Publishing, Bristol 1994

28. Radiation Therapy and Oncology III

Reference Number : RT 7307

Date : October 1995

Duration : 120 contact hours and 120 hours of independent learning

CIT Credit Value : Four (4)

Aim : For students to apply their understanding of oncology by demonstrating the appropriate use of radiation therapy techniques.

Recommended Entry Level : Successful completion of Radiation Therapy and Oncology II

Learning Outcomes : On completion of this module the successful student will be able to :

1. critically analyse moral, ethical and legal aspects of radiation therapy, and identify appropriate individual and group responses to these aspects;
2. identify the structure and functions of the health care system in New Zealand and the role of radiation therapy within the health care system.
3. evaluate the ways in which effects of radiation therapy can be enhanced;
4. critically analyse standard radiation therapy techniques with application to variations in clinical conditions;
5. apply their knowledge of radiobiology to the clinical setting;
6. describe in detail the oncology and pathology of common malignant tumours;
7. demonstrate the principles of treatment planning and dose calculation

Content

Corresponding to Learning Outcome 1

1. Moral dimensions of the role of the radiation therapist
2. Medico-legal dimensions of the role of the radiation therapist
3. Codes of ethics and the radiation therapist
4. Radiation therapists as members of a profession - roles and responsibilities
5. Problem solving within a moral/ethical and medico-legal framework

Corresponding to Learning Outcome 2

1. Structure of the New Zealand health care system, historical and current
2. Role of radiation therapy in the New Zealand health care system
3. Change in the New Zealand health care setting - personal, group, and structural responses.

Corresponding to learning outcome 3

1. Chemotherapeutic agents
2. Radiosensitising drugs
3. Other methods

Corresponding to Learning Outcome 4

1. Standard protocols
2. Anatomical and physiological differences
3. Radiosensitive structures
4. Dose limits

Corresponding to Learning Outcome 5

1. Radiobiological principles
2. Clinical decision making
3. Factors influencing cell response
4. Fractionation
5. Hypoxia and radiosensitivity
6. Dose and dose rate
7. Time and dose relationships
8. Acute radiation syndrome
9. Acute and late effects

Corresponding to Learning Outcome 6

1. Oncology and pathology of common malignant tumours

Corresponding to Learning Outcome 7

1. 2D and 3D computer planning
2. Plan and dose optimisation
3. Describe major factors affecting dosage
4. Manual calculation of dose for radiation therapy treatment techniques
5. Spatial perception

Suggested Learning and Teaching Approaches :

The learning outcomes of this module could be achieved by the following :

- student centred tutorials with an emphasis on class discussion and debate;
- seminar and project presentations;
- the use of media such as videos, journals, texts, newspaper articles and television will provide a rich source of material for discussion, and exploration;
- laboratory demonstrations.

Assessment of Learning Outcomes :

Summative assessment will consist of the following :

- One test (radiobiology) = 20% of total mark
- One test = 20% of total mark
- One assignment = 20% of total mark
- One final 3 hour written examination = 40% of total mark

50% must be gained in the coursework to be eligible to take the final examination. A pass will be awarded to those students who gain 50% overall.

Reporting Results to Students

Results will be reported to students as follows:

Course work, out of	60
Final examination, out of	40
TOTAL	100

Student result notices will carry grades from A to E.

Resources

Electronic Media

Students have access to a variety of data bases and CD Roms

Textbooks

Stanton. R & Stinson, D.	Applied Physics for Radiation Oncology (2nd Edition). Medical Physics Publishing, Wisconsin, USA, 1996.	
Neal, A & Hoskin, P.	Clinical Oncology: A Textbook for Students. Edward Arnold, London, 1994.	
Bentel, G; Nelson, C; Noel, K.	Treatment Planning and Dose Calculation in Radiation Oncology, Pergamon Press 1989	
Bomford, C; Kunkler, I; Sherriff, S.	Walter & Miller's Textbook of Radiotherapy, 2nd Edition, Churchill Livingstone 1993	
College of Radiographers	Process of Patient Care) Oncology) Therapeutic Radiograph) Science and Instrumentation)	1986
De Vita, V; Hellman, S; Rosenbera, S.	Cancer - Principles and Practice of Oncology, J B Lippincott Company 1993	
Dowd, S.	Practical Radiation Protection and Applied Radiobiology, W B Saunders Company 1994	
Griffiths, S; Short, C.	Radiotherapy : Principles to Practice, Churchill Livingstone 1994	

A Guide to Palliative Care in New Zealand, 2nd Edition, Douglas Pharmaceuticals 1992

Hall, E.	Radiobiology for the Radiologist, 3rd Edition, J B Lippincott Company 1988
Haskell, C.	Cancer Treatment, W B Saunders Company 1980
Lau, L; Compo, J.	Radiological Diagnosis, Holt-Saunders 1985
Moss, W; Brand, W; Battifora, H.	Radiation Oncology - Rationale, Technique, Results, 5th Edition, The C V Mosby Company 1979
Mould, R.	Radiotherapy Treatment Planning, 2nd Edition, Adam Hilger Ltd 1985
Murphy, G; Lawrence, W; Lenhard, R.	American Cancer Society Textbook of Clinical Oncology, American Cancer Society 1995

29 WORK EXPERIENCE

Reference Number : RT7308

Duration : Approximately 570 hours - 35 hr/wk
Approximately 340 hours - 40 hr/wk
(**NB** : These hours are added to the clinical studies hours to give a minimum of 2180 clinical hours.)

CIT Credit Value : NIL

Aim To enable students to integrate and consolidate learning experiences and work as part of a professional team.

Recommended Entry Level : Satisfactory completion of all Stage I modules.

Learning Outcomes : On completion of this module the student will be able to :

1 demonstrate the integration and consolidation of learning experience;
2 work as part of a professional team.

Structure

Work Experience is a pre-requisite for entry to the RT7302 Clinical Studies III final competency based assessment.

- Only in exceptional circumstances will a student be allowed to sit the final competency based assessment before completing the Work Experience module.
- No student will be able to graduate until the Work Experience module has been completed.

Assessment of Learning Outcomes :

Validated log of Work Experience and clinical studies hours.

Reporting Results to Students

Results will be reported to students as : **Pass/Fail**

OCCUPATIONAL CONDITIONS

During the programme, students must undertake approved work experience and present to CIT prior to entry to the RT7302 Clinical Studies III final competency based assessment, a validated log of Work Experience hours.

- The Work Experience complements the formal academic clinical components of the BHSc (RT) ie Clinical Studies I, Clinical Studies II and Clinical Studies III and fully prepares students for clinical practice upon qualifying.
- Work Experience hours can be completed at times during the year which are not committed to academic studies, eg : mid November to mid February and inter-semester breaks.
- It is recommended that the Work Experience hours are evenly divided between Stage II and Stage III so that integration and consolidation of learning is based on a standard policy.
- The requirements for State Registration (Medical Radiation Technologists Board) require that a ***minimum*** of 2180 clinical hours are completed. The Work Experience hours plus the Clinical Studies hours meet this requirement. Therefore the award of the degree incorporates the professional registration requirements.

Structure

- Work Experience is a pre-requisite for entry to the RT7302 Clinical Studies III final competency based assessment.
- Only in exceptional circumstances will a student be allowed to sit the final competency based assessment before completing the Work Experience module.
  An example of 'exceptional circumstances' may be a student who has passed all practical assessments in stage II and III, but due to illness has not been able to complete the Work Experience hours.
- No student will be able to graduate until the Work Experience module has been completed.

APPENDIX A

EXTERNAL MODERATORS

1. Functions

External moderators shall be responsible for providing an impartial evaluation of student assessment for all degree programme modules.

More Specifically

The functions of the external moderators are to ensure that:

- the evaluation of students' performance was fair and impartial;
- the standard of achievement required of students is comparable with that required in other institutions offering degree qualifications.

2. Specific Responsibilities

To report to the Division Examinations Committee on the effectiveness of assessments and any conclusions drawn from them.

To have authority to report directly to the Chairperson of the Academic Board where there are concerns about standards of assessment and performance.

To participate as required in any meeting of the Board of Studies which relates to results recommended during the moderator's period of office.

To concur with the form and content of summative assessments for the module.

To ensure that the assessments are conducted in accordance with programme regulations.

3. Appointment Criteria

To carry out their responsibilities, external moderators must be:

- competent in assessing student knowledge and skills at degree level;
- expert in the field of study concerned;
- impartial in judgement;
- properly briefed on their role and on the guiding principle and philosophy of the course.

4. Appointment Procedure

The appointment of all external moderators must be approved by the Board of Studies based on the recommendations of the Head of Department and Degree Programme Co-ordinator.

External moderators will normally be appointed for a term of three years.

New moderators should take up their appointment on or before the retirement of their predecessors. Moderators should remain available after the last assessments with which they are to be associated in order to deal with any subsequent reviews of decisions.

INTERNAL MODERATORS

1. **Functions**

Internal moderators shall be responsible for peer review of student assessment for all degree programme modules.

2. **Specific Responsibilities**

To concur with the form and content of summative assessments for the module.

To ensure that the assessments are conducted in accordance with programme regulations.

3. **Appointment Procedure**

The appointment of all internal moderators must be approved by the Head of Department based on the recommendations of the Degree Programme Co-ordinator.

APPENDIX B

CIT APPOINTED QUALIFICATION MONITOR

This person will have responsibility for the following:

- appraising the quality management systems for the programme on an ongoing basis;
- assisting the CIT in identifying ways to maintain and enhance the quality of the programme;
- notifying the Academic Board of any concerns regarding the standards or integrity of the programme.

APPENDIX C

CENTRAL INSTITUTE
OF TECHNOLOGY

Te Whare Wananga O Whirinaki

Minutes of the special meeting of the Academic Board held on Wednesday 25 October 1995

Present: Trevor Boyle (Chair), Mike Marfell-Jones, Richard Winder, Packiam Skinnon, Tommy Honey, Jill Harris, Tim Lockyer, Murdoch Pahi, Mike Cooper, Stuart Arden.

Apologies: Christine Roberts, Andrew Logan, Sheena Hudson

1. **Validation Committee recommendations**

The following programmes were presented by the Validation Committee for endorsement by the Academic Board:

Bachelor of Design
Bachelor of Health Sciences (Radiation Therapy)
Bachelor of Health Sciences (Radiation Therapy) conversion
Bachelor of Applied Technology
Bachelor of Counselling Studies
Bachelor of Hospitality Management
Bachelor of Tourism Management,
Master of Science (by research) and Doctor of Philosophy

Richard Winder noted that of these, only Bachelor of Health Sciences (Radiation Therapy) had satisifed the Validation Committee's conditions.

95/139 **Resolved**

That the Academic Board approves the programme and recommends to Council the approval of the **Bachelor of Health Sciences (Radiation Therapy)** as a three year full time programme for 1997 to 2001 inclusive. Enrolment will be onto the full programme or part time on individual modules. Stage 1 of the programme is 33 teaching weeks plus 7 weeks of vacation, a total of 40 weeks. Stages 2 and 3 are 36 teaching weeks plus 3 weeks of vacation, a total of 39 weeks.

Bachelor of Tourism Management

Richard Winder advised that this degree had been removed from consideration.

The remaining programmes were to be considered at a special Academic Board meeting to be held on :

Monday, 30 October 1995, 3.00pm, in the New Council Room.

2. **Formal Thankyou**

The Academic Board thanked with acclamation the Academic Registrar and his various Validation Committee teams for their tremendous efforts in the degree development process.

The meeting closed at 9.00am.

Signed: _____

Chairperson

Dated: _____

octsp.min

APPENDIX D

APPENDIX D

403.4

FACULTY OF SCIENCE & HEALTH SCIENCES

MEMORANDUM

Ref: MRT

TO: HOD, Radiation Therapy

FROM: Dean

SUBJECT: NZQA Official degree approval notification

DATE: 14 August 1996

Herewith a copy of the revised letter from NZQA re degree approval (and a copy of MHC's confirmation of receipt) for your records.

Mike Marfell-J

Dr Mike Marfell-Jones
Dean

CENTRAL
INSTITUTE OF
TECHNOLOGY

Te Whare Wananga O Whirinaki

9 August, 1996

A2-54-1

Copied MMJ

Barry Dawe,
NZ Qualifications Authority,
P.O. Box 160,
WELLINGTON

Dear Barry,

Thank you for your letter of 1 August, 1996 advising of the resolution by the Board of the Qualifications Authority in respect of the Bachelor of Health Science (Radiation Therapy) degree.

The purpose of my letter is to confirm my understanding and acceptance of the four part resolution contained in your letter referring to the BHSc and the associated Conversion programme.

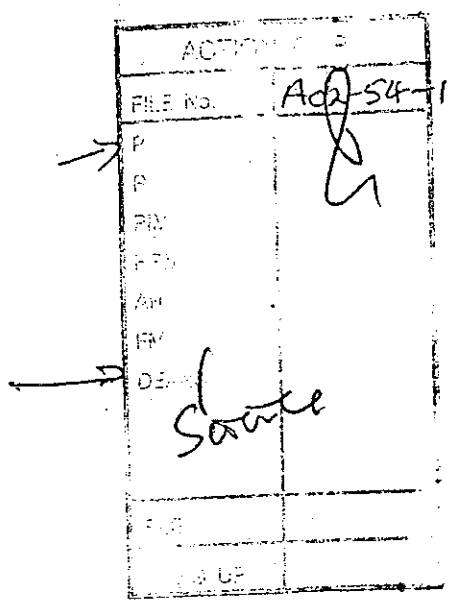
Thank you for your advice of the outcome.

Yours sincerely,

MICHAEL H. COOPER
Principal and CEO

Central Institute of Technology, Somme Road, Heretaunga
P O Box 40-740, Upper Hutt, New Zealand, Telephone (04) 527 6398, Facsimile (04) 527 6359
Auto Attendant (04) 527 6397

NEW ZEALAND QUALIFICATIONS AUTHORITY
Mana Tohu Matauranga o Aotearoa



1 August 1996

Mr Michael H Cooper
Chief Executive
Central Institute of Technology
Box 40-740
UPPER HUTT

Dear Mr Cooper

The Board of the Qualifications Authority accepted the recommendation of the panel which evaluated Central Institute of Technology's Bachelor of Health Science (Radiation Therapy) degree. For your information I have incorporated into this letter the full text of the resolution approved by the Board:

It was resolved by the Board:

"i **that the proposed bachelor of Health Science (Radiation Therapy be approved;**

ii **that the Central Institute of Technology be accredited to provide the Bachelor of Health Science (Radiation Therapy);**

iii **that the conversion programme presented for approval by the Central Institute of Technology is approved as "a conversion programme leading to the award of Bachelor of Health Science" and that the Central Institute of Technology is accredited to teach it;**

iv **the conversion programme is approved for the same period of time as the full programme and that the Central Institute of Technology is accredited to teach it for that period of time."**

The Board requests that a formal reply be received from you indicating your understanding and acceptance of the resolution.

The length of the course is three years, full-time.

U-Bix Centre, 79 Taranaki Street, Wellington, New Zealand, P.O. Box 160, Telephone: (04) 802 3000, Fax: (04) 802 3112

Degree and Post-graduate qualification approval and accreditation allows you to publicise the status of the programme by the following words on certificates and publications:

> *"This degree is approved by the New Zealand Qualifications Authority under the provisions of the Education Act 1989, and Central Institute of Technology is accredited to offer it."*

The approval and accreditation is dependent upon your organisation maintaining the same standards as were documented and demonstrated in your application, and during the approval and accreditation process. If there are any significant changes you must advise NZQA immediately.

Subsequent to approval being granted, Qualifications Authority monitoring will be applied. You will be required to pay all costs relating to the monitoring process.

The approval and accreditation will be reviewed periodically. The first review date has been set at November 2001. Three months before this date information will be sent to you on the report which will be required. Two months before the review date you should send the Authority a report on the course and its delivery. You will be required to pay all the costs relating to this review.

Please convey my congratulations to members of Central Institute of Technology who contributed to the success of this degree approval process.

Yours sincerely

Barry Dawe
Team Leader
Quality Assurance