

**Department of Radiation Therapy
University of Otago, Wellington**



**BACHELOR
OF
HEALTH SCIENCES
(Medical Radiation Therapy)**

BHealSc (MRT)

CURRICULUM DOCUMENT

February 2010

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1. Aims of the Programme

1.1 General Aims

The Bachelor of Health Sciences programme (Medical Radiation Therapy) aims to produce graduates with the following attributes:

- 1.1.1 clinical competence in medical 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 hours.

- The Work Experience hours complement the formal academic clinical components of the BHealSc (MRT) ie Stage I Clinical Placements, Radiation Therapy Practice II and Clinical Studies III, and fully prepares students for clinical practice upon qualifying.
- Work Experience hours must be completed as per the Bachelor of Health Sciences (Medical Radiation Therapy) academic calendar.
- Students will have completed approximately 2200 clinical hours (clinical studies plus work experience) at the completion of the degree.

3. Programme Development

Relocation to the University of Otago

With the dis-establishment of CIT in June 2001, the Bachelor of Health Science (Radiation Therapy) relocated to the University of Otago's Wellington School of Medicine and Health Science. The programme was renamed the Bachelor of Health Sciences (Medical Radiation Therapy).

The radiation therapy profession and the University of Otago took the opportunity to develop the programme in a university environment. This then permitted the opportunities for study and research at undergraduate and postgraduate levels in an internationally recognized university focused on health sciences.

Background

The Bachelor of Health Science (Radiation Therapy) programme was a development of the National Diploma in Medical Radiation Therapy – which in turn developed from the Central Institute of Technology Diploma in Therapeutic Radiography.

The radiation therapy profession had, 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 had a degree in radiation therapy for many years as had Australia. The USA moved in this direction also. Canada had 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 required 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 was developed by Unitec and commenced in 1995. Manawatu Polytechnic (now UCOL) offer the Bachelor in Applied Science (Medical Imaging Technology), which commenced in 1996. A degree was also developed and implemented by CPIT (Christchurch Polytechnic Institute of Technology) in 1998. For therapy the implementation of the Bachelor of Health Science (Radiation Therapy) at CIT (Central Institute of Technology) allowed radiation therapists to maintain parity with their professional colleagues in New Zealand.

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

In 2005 a University of Otago led Curriculum Review commenced and the revised curriculum was implemented from 2009. This curriculum has been developed after extensive consultation with the profession, university, stakeholders and external reviewers.

4. Programme Description

The curriculum is designed so that papers 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.

4.1 The Three Stage Programme

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

A new curriculum has been implemented from 2009, commencing with Stage I and then Stage II in 2010.

All papers are compulsory

4.2 Stage I

Stage I consists of the following papers:

| Paper Title | Points |
|--|--------|
| MERA 111 Anatomy & Imaging | 30 |
| MERA 112 Cancer Cell Biology | 10 |
| MERA 113 Health & Human Behaviour | 9 |
| MERA 114 Healthcare Communication | 9 |
| MERA 115 Radiation Technology I | 18 |
| MERA 116 Radiation Therapy and Oncology I | 30 |
| MERA 117 Radiation Therapy Planning Concepts I | 14 |

1 point is equivalent to 12.5 hours of student learning

4.3 Stage II

Stage II consists of the following papers:

| Paper Title | Prerequisite | Points |
|---|--------------------|--------|
| MERA 211 Radiation Therapy Practice II | All stage I papers | 60 |
| MERA 212 Principles of Research | All stage I papers | 6 |
| MERA 213 Advanced Healthcare Communication | MERA 113 and 114 | 10 |
| MERA 214 Radiation Technology II | MERA 115 | 16 |
| MERA 215 Radiation Therapy and Oncology II | MERA 116 | 10 |
| MERA 216 Radiation Therapy Planning Concepts II | MERA 117 | 18 |

1 point is equivalent to 12.5 hours of student learning

4.4 Stage III

Stage III consists of the following papers:

| Paper Title | Prerequisite | Points |
|---|-----------------------------------|--------|
| MERA 301 Clinical Studies III | Clinical Studies II | 60 |
| MERA 302 Applied Research Methods | Principles of Research | 15 |
| MERA 303 Radiation Technology III | Radiation Technology II | 15 |
| MERA 304 Radiation Therapy and Oncology III | Radiation Therapy and Oncology II | 27 |

1 point is equivalent to 10 hours of student learning

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 paper 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 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 Head of Department 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 papers which specifically address these areas, such as the Behavioural Science papers. However, there is also a formal expectation of early application of the principles in all courses in the first stage and beyond.

In all papers, 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 these interact.

This is delivered through the anatomy and cancer cell biology papers. The imaging of anatomy is introduced at the beginning of Stage I and forms a foundation for the *Radiation Therapy & Oncology* and *Radiation Therapy Planning Concepts* papers.

4.8 Behavioural Science

Students need to have access to knowledge from behavioural science and healthcare communication 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 *Radiation Therapy Practice* and *Healthcare Communication* papers as well as the *Health and Human Behaviour* components.

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 radiation technology 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 papers relevant to this area are the *Radiation Technology I & II*.

4.10 Radiation Therapy Practice

This section of the curriculum, which includes the Stage I clinical placements, the Stage II *Radiation Therapy Practice* and Stage III *Clinical Studies* papers, is designed to prepare the student for practice in a modern clinical setting. The clinical studies papers are designed to integrate the students' learning to a point where practical skills and theoretical understanding merge. Students have the opportunity to develop their clinical skills under supervision in well equipped radiation oncology departments in Auckland, Auckland Private, Waikato, Palmerston North, Wellington, Christchurch, Christchurch Private 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 Methods* papers 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 Sciences (Medical Radiation Therapy) is a three year full time programme.

5.2 Composition of Each Stage

5.2.1 Stage I

31 weeks attending classes at the Department of Radiation Therapy, University of Otago, Wellington.

2 weeks clinical placement with a clinical provider.

5.2.2 Stage II

1 semester Radiation Therapy Practice with a clinical provider.

1 semester attending classes at the Department of Radiation Therapy, University of Otago, Wellington.

5.2.3 Stage III

1 semester attending classes at the Department of Radiation Therapy, University of Otago, Wellington.

1 semester Clinical Studies with a clinical provider.

6. Structure of the Programme

The programme consists of 3690 notional hours of student learning divided into three stages.

6.1 Stage I

| | |
|----------|---------------------------------------|
| MERA 111 | Anatomy & Imaging |
| MERA 112 | Cancer Cell Biology |
| MERA 113 | Health & Human Behaviour |
| MERA 114 | Healthcare Communication |
| MERA 115 | Radiation Technology I |
| MERA 116 | Radiation Therapy and Oncology I |
| MERA 117 | Radiation Therapy Planning Concepts I |

6.2 Stage II

| | |
|----------|--|
| MERA 211 | Radiation Therapy Practice II |
| MERA 212 | Principles of Research |
| MERA 213 | Advanced Healthcare Communications |
| MERA 214 | Radiation Technology II |
| MERA 215 | Radiation Therapy and Oncology II |
| MERA 216 | Radiation Therapy Planning Concepts II |

6.3 Stage III

| | |
|----------|------------------------------------|
| MERA 301 | Clinical Studies III |
| MERA 302 | Applied Research Methods |
| MERA 303 | Radiation Technology III |
| MERA 304 | Radiation Therapy and Oncology III |

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

Students must have a current approved comprehensive first aid certificate before taking a final clinical or written assessment. This is relevant for Stage I, II and III.

MERA 111: Anatomy & Imaging

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 test = 15% of total mark
- one final 2 hour written examination = 40% of total mark

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

A pass will be awarded to all students who gain 50% minimum in the examination and 50% overall.

MERA 112: Cancer Cell Biology

Summative assessment will consist of the following:

- one test = 30% of total mark
- one test = 30% 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% minimum in the examination and 50% overall.

MERA 113: Health & Human Behaviour

Summative assessment will consist of the following :

- one assignment = 25% of total mark
- one assignment = 35% of total mark
- one final 2 hour written examination = 40% of total mark

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

A pass will be awarded to all students who gain 50% minimum in the examination and 50% overall.

MERA 114: Health Care Communication

Summative assessment will consist of the following:

- one assignment = 50% of total mark
- one observational analysis = 50% of total mark
 - role play (10%)
 - peer evaluation (15%)
 - assessor evaluation (25%)

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

MERA 115: Radiation Technology I

Summative assessment will consist of the following :

- one test = 20% of total mark
- one test = 20% of total mark
- one test = 20% of total mark
- one final 2 hour written examination = 40% of total mark

50% must be gained in the coursework and the computer assignment must be successfully completed to be eligible to take the final examination.

A pass will be awarded to all students who gain a minimum of 50% in the examination and 50% overall.

MERA 116: 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 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% minimum in the examination and 50% overall.

MERA 117: Radiation Therapy Planning Concepts I

Summative assessment will consist of the following:

- one test = 40% of total mark
- one assignment = 30% of total mark
- one viva = 30% of total mark

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

MERA 211: Radiation Therapy Practice II

Summative assessment will consist of the following:

- one rotational assessment (sim/CT) = Pass/Fail
- one rotational assessment (planning) = Pass/Fail
- one rotational assessment (treatment) = Pass/Fail
- one clinical journal = Pass/Fail

A pass will be awarded to all students who gain a pass in each component. Students will need to gain 640 clinical hours for the semester in which they have enrolled.

Reassessment: A reassessment can occur for the clinical journal and one rotational assessment.

MERA 212: Principles of Research

Summative assessment will consist of the following:

- 1 test = 50% of total mark
- 1 assignment = 50% of total mark

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

MERA 213: Advanced Healthcare Communication

Summative assessment will consist of the following :

- one case study = 40% of total mark
- one assignment = 30% of total mark
- one assignment = 30% of total mark

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

MERA 214: Radiation Technology II

Summative assessment will consist of the following :

- one assignment = 20% of total mark
- one test = 20% of total mark
- one test = 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 a minimum of 50% in the examination and 50% overall.

MERA 215: Radiation Therapy and Oncology II

Summative assessment will consist of the following :

- One group presentation = 30% of total mark
- One test = 30% 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% minimum in the examination and 50% overall.

MERA 216: Radiation Therapy Planning Concepts

Summative assessment will consist of the following:

- one assignment (imaging) = 10%
- one assignment (dosimetry/calculations) = 30%
- one test (radiobiology) = 20%
- one VIVA = 40%

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

MERA 301: Clinical Studies III

Summative assessment will consist of the following :

- one rotational assessment (simulation/CT) = Pass/Fail
- one rotational assessment (dosimetry) = Pass/Fail
- one rotational assessment (treatment) = Pass/Fail
- one OSCE = Pass/Fail
(Objective Structured Clinical Examination)

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

Reassessment:

- A reassessment can occur for one rotational assessment in dosimetry and one rotational assessment in either simulation/CT or treatment.
- One reassessment can occur for the OSCE.

MERA 302: Applied Research Methods

Summative assessment will consist of the following :

- written report = 70% of total mark
- oral presentation = 15% of total mark
- poster presentation = 15% of total mark

Students must complete all three aspects of the assessment.

A pass will be awarded to students who have gained a mark of 50% overall.

MERA 303: Radiation Technology III

Summative assessment will consist of the following :

- one assignment
- (IMRT, brachytherapy, quality assurance) = 30% of total mark
- one assignment
- (imaging) = 15% of total mark
- one assignment
- (resource management) = 15% of total mark
- one final 2 hour 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 40% minimum in the examination and 50% overall.

MERA 304: Radiation Therapy and Oncology III

Summative assessment will consist of the following :

- one test (radiobiology) = 15% of total mark
- one assignment (professional issues) = 15% of total mark
- one dosimetry assessment (20/30 pass mark) = 30% of total mark
- one 2 hour 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 40% minimum in the examination and 50% overall.

Reassessment:

One reassessment can occur in the dosimetry assessment if the pass mark of 20/30 is not achieved.

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 Curriculum Review Committee and Radiation Therapy Board of Studies and Examinations.

7.4 Moderators

Internal moderation occurs for each paper within the Department of Radiation Therapy. Two external moderators are appointed from the profession (one clinical tutor and one senior clinical radiation therapist) to moderate written examinations. A clinical radiation therapist moderates a sampling of clinical journals.

7.5 Monitor

Academic monitoring occurs from the School of Medical Radiation Science, University of Sydney.

The Medical Radiation Technologists Board monitors the Bachelor of Health Sciences (Medical Radiation Therapy) in accordance with guidelines, under the Health Practitioners Competence Assurance Act, 2003.

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.

8.2 Minor Changes

Where the changes are more significant, but do not involve the structure of the programme they will be referred on to the Radiation Therapy Board of Studies and Examinations. Minutes from these minutes refer issues to the Health Sciences Divisional Board.

8.3 Major Changes

Any change to the overall structure will be referred to CUAP for approval following approval by the University of Otago Senate.

9. Management of the Programme

9.1 Programme Co-ordination

The Director and Head of Department has responsibility for the overall co-ordination of the programme.

9.2 Paper Convenors

Paper convenors are responsible for the efficient co-ordination and delivery of papers. The internal moderators work with the paper convenors on content and assessment.

9.3 Year Leaders

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

10. Relationship to Other Programmes

10.1 Overseas Undergraduate Qualifications

A number of New Zealand radiation therapists have gained degree level qualifications in radiation therapy. The most popular programmes were the BHSc – Conversion Programme from the Central Institute of Technology and the BSc (Radiography) Conversion Programme from the Anglia Polytechnic University in England. These programmes and others such as the BSc(Hons) Radiotherapy from Southbank University, London, require students to attain high levels of 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 BHealSc(MRT) programme.

10.2 New Zealand Postgraduate Qualifications

There are a number of postgraduate qualifications available to the graduates from the BHealSc(MRT).

The University of Otago offers the BHealSc(MRT) - Honours and also postgraduate certificates, diplomas, masters and PhD programmes.

The University of Sydney offers postgraduate specialisations in MRT up to PhD level. The University of Otago and University of Sydney have a formal contract to deliver postgraduate brachytherapy.

The University of Otago and Monash University also have a formal collaboration.

11. Programme Regulations

11.1 Entry Requirements

All enrolments to the Bachelor of Health Sciences (Medical Radiation Therapy) degree programme are subject to the approval of the Radiation Therapy Admissions Committee. To gain entry to the programme applicants must satisfy the following criteria:

- Eligibility to enter the University having satisfied the University's admission requirements as stated in the University Calendar (ie. gained an entrance qualification based on NCEA Level 3 results or equivalent).
Priority will be given to those successfully completing English or an English rich subject, Mathematics (Statistics or Calculus), and either Biology or Physics at NCEA Level 3 or equivalent.
- Demonstration of suitability to the profession by interview.

For a student whose application for admission is based on qualifications gained outside New Zealand and whose first language is not English or Maori, evidence of such competence and understanding to be supplied shall be in the form of certified results in:

- the International English Language Test (IELT) with a score of not less than 7.5 in the academic band, with a score of 8 or better in the listening band and 8 or better in the speaking band. This test is to be taken in New Zealand.
- In general students will have clinical placements with Clinical Providers which operate 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.
- Students are required to hold a current comprehensive first aid certificate on entry to the programme. This certificate is to be maintained throughout the duration of the programme.

Note: Student numbers will be limited to the availability of clinical placements.

11.2 Admission to the Course

- (a) Admission to the course for the degree of Bachelor of Health Sciences shall be determined by the Pro Vice-Chancellor (Health Sciences) on the advice of the Radiation Therapy Admissions Committee.
- (b) The number of candidates to be admitted to the first year of the course will be determined by the number of places available for clinical education.

- (c) Candidates will be selected by the Radiation Therapy Admissions Committee on the basis of their academic record and their interview.

Note: Applications for admission to first year classes must reach the Division of Health Sciences not later than 15th September in the year preceding desired entry.

11.3 Completion of the Programme

- (a) The programme consists of three stages. Generally students must succeed at each stage to progress to the next stage.
- (b) 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.
- (c) Students will be expected to complete the programme in five years or less. Students will need to seek a clinical placement before re-enrolling in a clinical paper.
- (d) Every course of study must satisfy the requirements for one option in the schedule of endorsements for the degree.
- (e) Every course of study for the degree shall normally be followed for not less than three years of full-time study.

11.4 Assessments

- (a) Students will be given a range of formative assessments throughout the year as a basis for determining progress.
- (b) Extensions to due dates will only be considered by the Head of Department in mitigating circumstances.
- (c) In the case of illness at the time of a test, the student must contact Reception on Ph: 385 5475 **PRIOR** to the start of a test. A medical certificate must be presented (dated the day of the test) to the Head of Department before an alternative test will be arranged. Failure to observe this procedure may result in the student being refused an opportunity to sit the test, and therefore receive a score of zero for it.
- (d) Students must complete all coursework requirements, which includes formative and summative assessments to gain terms.

- (e) Students who are refused terms will be required normally to repeat the year as a whole, subject to the approval by the Radiation Therapy Board of Studies and Examinations.

Submission of Previously Assessed Work

- (f) Any student who attempts to pass off their own work, either in part or whole, which has previously been assessed in the same or another paper, **as original work** will receive no assessment result for that work, nor will they have an opportunity to resubmit the work for that assessment. In addition, the student may be subject to disciplinary action.

Plagiarism

- (g) Students should make sure that all submitted work is their own. Plagiarism (including being party to someone else's plagiarism) is a form of dishonest practice. Plagiarism is defined as copying or paraphrasing another's work, whether intentionally or otherwise, and presenting it as one's own. In practice this means plagiarism includes any attempt in any piece of submitted work (e.g. an assignment or test) to present as one's own work the work of another (whether of another student or a published authority). Any student found responsible for plagiarism in any piece of work submitted for assessment shall be subject to the University's dishonest practice regulations which may result in various penalties, including forfeiture of marks for the piece of work submitted, a zero grade for the paper, or in extreme cases exclusion from the University.

General

- (h) Any student who attempts to deceive or practice deceit, or obtain unfair advantage by their actions as a student may be subject to disciplinary action.

11.5 Reassessment Policy

- There will be no reassessments except for Radiation Therapy Practice II, Clinical Studies III and the dosimetry assessment in Radiation Therapy & Oncology III.
- Radiation Therapy Practice II
 - a reassessment can occur for the clinical journal and one rotational assessment.
- Clinical Studies III
 - a reassessment can occur for one rotational assessment in dosimetry and one rotational assessment in either simulation/CT or treatment.
 - one reassessment can occur for the OSCE
- Radiation Therapy and Oncology III
 - one reassessment can occur if the pass mark of 20/30 is not achieved in the dosimetry assessment.

11.6 Examination

- (a) Every candidate must gain terms before being admitted to examinations. This is defined as at least a 50% pass in the coursework component.
- (b) Candidates in Stage I and II will need to achieve at least 50% in any examination to be eligible to be awarded a pass overall.
- (c) Candidates in Stage III will need to achieve at least 40% in any examination to be eligible to be awarded a pass overall.
- (d) An OSCE (Objective Structured Clinical Examination) reassessment is offered in MERA 301: Clinical Studies III.

11.7 Awarding of Degree

Candidates must pass all papers in the programme to be awarded the Bachelor of Health Sciences (Medical Radiation Therapy) degree by the University of Otago.

11.8 Withdrawal from the Course

A candidate who withdraws from the course must obtain the approval of the Radiation Therapy Board of Studies and Examinations before being readmitted to the course. Applications for readmission must be with the Board of Studies and Examinations by 1 November in the year prior to that for which readmission is sought.

11.9 Exclusion from the Course

Any candidate who fails to complete the requirements for a paper in two academic years may be excluded by the Board of the Division of Health Sciences on the recommendation of the Radiation Therapy Board of Studies and Examinations in Health Sciences.

11.10 Variations

The Pro-Vice-Chancellor (Health Sciences) may in exceptional circumstances approve a course of study which does not comply with these regulations.

**PAPER
DESCRIPTORS**

STAGE ONE PAPERS

- MERA 111 Anatomy & Imaging
- MERA 112 Cancer Cell Biology
- MERA 113 Health & Human Behaviour
- MERA 114 Healthcare Communication
- MERA 115 Radiation Technology I
- MERA 116 Radiation Therapy and Oncology I
- MERA 117 Radiation Therapy Planning Concepts I

12. Anatomy and Imaging

| | |
|-------------------------|--|
| Reference Number | MERA 111 |
| Date: | February 2010 |
| Duration: | 150 contact hours and 225 hours of independent learning |
| Points: | 30 |
| Aim: | To gain a basic understanding of the gross and sectional anatomy of the human body and to be able to identify body structures on radiographic images |

Recommended Entry Level: Entry to the programme

Learning outcomes: On the completion of this paper the successful student will be able to:

1. describe the anatomical organisation of the human body in terms of cells, tissues and organs for each of the principal organ systems;
2. describe in detail the lymphatic drainage of structures affected by cancer;
3. be able to relate surface anatomy to underlying body structures;
4. use knowledge of gross body anatomy to identify body structures on X-rays, CT scans and MRI scans.

Content:

Corresponding to learning outcome 1

- (a) Cell types, tissue types, organs and function of:
- Integumentary system
 - Skeletal system
 - Muscular system
 - Cardiovascular system
 - Lymphatic system
 - Respiratory system
 - Digestive system
 - Urinary system
 - Reproductive systems
 - Endocrine system
 - Nervous system

Corresponding to learning outcome 2

- (a) Lymphatic drainage of structures in: head and neck, thorax, abdomen, pelvis and extremities

Corresponding to learning outcome 3

- (a) Body regions and planes
- (b) Boundaries and contents of body cavities
- (c) Clinical significance of surface land marks and planes of head, thorax, abdomen and extremities

Corresponding to learning outcome 4

- (a) Principles and diagnostic purpose of X-rays, CR scans, MRI scans;
- (b) Identification of structures on X-rays, CT scans and MRI scans.

Suggested Learning and Teaching Approaches

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

- Lectures
- Student centred tutorials
- The use of models, X-rays, CT scan and MRI scans

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 test = 15% of total mark
- one final 2 hour written examination = 40% of total mark

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

A pass will be awarded to all students who gain 50% minimum in the examination and 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

Backhouse, K.M. (1986). *A colour atlas of surface anatomy, clinical and applied*. Wolfe Medical Publications, England

Ellis, H., Logan, B. and Dixon, A. (1999). *Human sectional anatomy (2nd edition)*. Reed Elsevier, England

Hansen, J.T. and Koeppen, B. M. (2002). *Netter's atlas of human physiology*. Icon Learning Systems, USA

Kelly, L.L. and Petersen, C. M. (2007). *Sectional Anatomy for Imaging Professionals*. Mosby.

Kember, P. (2000). *Imaging for Junior Doctors. A survival Guide*. WB Saunders, London.

Knollman, F. and Coakley (2006). *Multi slice CT, principles and protocols*. Saunders, Elsevier, USA

- Tortora, G.J. & Derrickson, B. (2009). *Principles of Anatomy and Physiology*. (12th Edition). John Wiley & Sons.
- Moeller, B. and Reif, E.(2007). *Pocket atlas of sectional anatomy, Volume I and II*. Thieme, USA
- Patton, K.T. (2006). *Survival guide for anatomy and physiology*. Mosby, Elsevier, USA
- Webber, E.C., Vilensky, J.A. & Carmichael, S.W. (2009). *Netter's Concise Radiologic Anatomy*. Saunders, an imprint of Elsevier Inc.
- Wicke, L. (1996) *Atlas of radiologic anatomy 6th edition*. Williams and Wilkins, USA

13. Cancer Cell Biology

| | |
|---------------------------------|--|
| Reference Number | MERA 112 |
| Date: | February 2010 |
| Duration: | 50 contact hours and 75 hours of independent learning |
| Points: | 10 |
| Aim: | To gain a basic understanding of cancer cell biology |
| Recommended entry level: | Entry to the programme |
| Learning outcomes: | On the completion of this paper the successful student will have a basic understanding of: |

1. DNA synthesis and gene expression;
2. cell cycle and cell cycle progression;
3. mutagenesis and carcinogenesis;
4. radiobiology of normal tissues and tumours;
5. chemotherapy ;
6. immunotherapy.

Content:

Corresponding to learning outcome 1:

- (a) Basic biochemistry, including structure of DNA and RNA
- (b) Genetic code
- (c) Molecular dogma (DNA synthesis, transcription, reverse transcription, translation)

Corresponding to learning outcome 2:

- (a) Cell cycle, check points and progression

Corresponding to learning outcome 3:

- (a) Mutagenesis (chemically, virally, radiation-induced)
- (b) Epigenetics (methylation, acetylation)
- (c) Carcinogenesis (tumour suppressor genes, proto-oncogenes, cell cycle progression, tumour staging)

Corresponding to learning outcome 4:

- (a) Radiobiology of healthy tissues (pathology and kinetics, 4Rs)
- (b) Radiobiology of tumours

Corresponding to learning outcome 5:

- (a) Principles of pharmacology
- (b) Chemotherapy that targets fast proliferating cells
- (c) Targeted Chemotherapy

(d) Hormone therapy

Corresponding to learning outcome 6:

(a) Basic immunology

(b) Escaping immuno-surveillance

(c) Antibody based therapies

(d) Adoptive immune transfer and immune vaccines

Suggested learning and Teaching Approaches:

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

- Lectures
- Student centred tutorials
- The use of videos, books and journals

Assessment of Learning Outcomes:

Summative assessment will consist of the following:

- one test = 30% of total mark
- one test = 30% 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% minimum in the examination and 50% overall.

Reporting Results to Students

Results will be reported as a mark out of 100 for coursework. Student result notices will carry grades from A to E

Resources

Bryant, B. and Knights, K. (2007). *Pharmacology for Health Professionals (2nd edition)*. Mosby, Elsevier, Australia.

Campbell, M.K. (1999), *Biochemistry (3rd edition)*. Saunders College publishing.

Cooper, G.M. (1997). *The cell: a molecular approach*. ASM Press, USA.

Delves, P.J., Martin, S.J., Burton, D. R. and Roitt, I. M. (2006). *Roitt's Essential Immunology (11th edition)*. Blackwell publishing, UK

McCance, K.L. and Huether, S. E. (2002). *Pathophysiology. The biologic basis for disease in adults and children (4th edition)*. Mosby, Elsevier, Australia

Martini. F.H. (2006) *Fundamentals of anatomy and physiology (7th edition)*. Pearson, Benjamin Cummings, USA

Springhouse. (2008). *Clinical pharmacology made incredibly easy (3rd edition)*. Lippincott, Williams and Wilkins, USA

14. Health and Human Behaviour

| | |
|----------------------------------|---|
| Reference Number : | MERA 113 |
| Date : | February 2010 |
| Duration : | 40 contact hours and 72.5 hours of independent learning |
| Points : | 9 |
| Aim : | To introduce students to the psychological and sociological models of thinking about health, illness and coping with life-threatening illness and to apply this knowledge to the radiation therapy setting. |
| Recommended Entry Level : | Entry to programme |
| Learning Outcomes : | On completion of this paper the successful student will be able to : |

1. demonstrate an understanding of the relationship between health, well-being and human behaviour;
2. identify social, political, economic and cultural determinants of health;
3. discuss stress and coping in relation to diagnosis of and treatment(s) for life-threatening illness, with special emphasis on cancer;
4. discuss risk and protective factors across the lifespan that affect coping with life-threatening illness;
5. discuss the relevance of culture to an individual's and group's experience of society with particular reference to health and illness;
6. describe the relevance of the Treaty of Waitangi to New Zealand society and the delivery of health care;
7. discuss decision-making in relation to diagnosis, side-effects and survivorship of cancer and its treatment(s);
8. identify research methodologies in health psychology and health sociology.

Content:

Corresponding to Learning Outcome 1

- (a) Definitions of health, well-being, illness and disease
- (b) Health beliefs and health behaviour
- (c) Theoretical perspectives of personality, learning and social learning, motivation and perception

Corresponding to Learning Outcome 2

- (a) Systems of inequality based on class, age, gender, race, ethnicity, disability, sexual orientation,
 - prejudice, stereotyping, discrimination and stigma
- (b) Inequalities in New Zealand society

- (c) The consequences of inequalities in access to resources, including health for the individual, family and society, with an emphasis on cancer

Corresponding to Learning Outcome 3

- (a) Causes and effects of stress on individuals
(b) Stress and the immune system
(c) Reactions to illness: interactions between physical, mental, emotional and social phenomena
(d) Coping strategies in relation to stress and illness

Corresponding to Learning Outcome 4

- (a) Psychosocial modifiers of stress and coping across the lifespan
(b) Contextual influences on risk and protective factors that affect coping
(c) Human development and health

Corresponding to Learning Outcome 5

- (a) The meaning and relevance of culture to individual and group self perception, beliefs and practices
(b) The relevance of culture to New Zealand society
(c) Culture, health, illness, and health care delivery in the radiation therapy setting
(d) Cultural safety in health care delivery

Corresponding to Learning Outcome 6

- (a) The Treaty of Waitangi and its significance to Maori and Pakeha
(b) The relevance and application of the Treaty of Waitangi to health, illness and health care delivery

Corresponding to Learning Outcome 7

- (a) Cognition and health beliefs
(b) Clinical decision making
(c) Adherence to treatment, management of side-effects, survivorship/ living with life-threatening illness

Corresponding to Learning Outcome 8

- (a) Quantitative research methodology in health psychology and sociology
(b) Qualitative research methodology in health psychology and sociology

Suggested Learning and Teaching Approaches :

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

- student centred tutorials with an emphasis on class discussion and debate;
- the use of research-based evidence;
- guest speakers who are able to offer current and practical information on topics;
- case studies and problem based learning;
- 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.

Assessment of Learning Outcomes :

Summative assessment will consist of the following :

- one assignment = 25% of total mark
- one assignment = 35% of total mark
- one final 2 hour written examination = 40% of total mark

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

A pass will be awarded to all students who gain 50% minimum in the examination and 50% overall.

Reporting Results to Students

Results will be reported to students as follows:

| | |
|---------------------|-----|
| Course work, out of | 100 |
| TOTAL | 100 |

Student result notices will carry grades from A to E.

Resources

- Alfaro-LeFevre, R. (2004). *Critical thinking and clinical judgement: A practical approach*. St Louis, Mo.: Saunders.
- Bird, L., & Drewery, W. (2004). *Human Development in Aotearoa*. (2nd Ed.). McGraw Hill, Auckland.
- Blakely, T. (2007). *Tracking disparity: Trends in Ethnic and Socioeconomic Inequalities in Mortality, 1981-2004*. Ministry of Health: Wellington, NZ.
- Brennan, J., & Moynihan, C. (2004). *Cancer in Context: A Practical Guide to Supportive Care*. Oxford: Oxford University Press.
- Camic, P.M., Rhodes, J.E. & Yardley, L. (2003). *Qualitative Research in Psychology: Expanding Perspectives in Method and Design*. Washington, DC: American Psychological Association.
- Cooper, C.L. (2005). (Ed.). *Handbook of Stress Medicine and Health*. Boca Raton: CRC Press.
- Davidson, C. and Tolich, M. (Eds.). (2007). *Social Science Research in New Zealand: Many Paths to Understanding*. (2nd Ed.). North Shore: Pearson Education New Zealand.
- Davis, P., & Dew, K. (2005). *Health and Society in Aotearoa New Zealand*. (2nd Ed.). Wellington: Oxford University Press.
- Dew, K. (2003). *Borderland Practices: Regulating Alternative Therapies in New Zealand*. Dunedin: University of Otago Press.
- Dew, K., & Kirkman, A. (2002). *Sociology of Health in New Zealand*. Auckland: Oxford University Press.
- Durie, M. (1998). *Whaiora: Maori Health Development*. (2nd Edition). Auckland: Oxford University Press.
- Durie, M. (2001). *Mauri Ora: The Dynamics of Maori Health*. Auckland. Oxford University Press.
- Feurerstein, M. (2007). (Ed.). *Handbook of Cancer Survivorship*. New York: Springer.
- Germov, J. (Ed.). (2000). *Second Opinion; An Introduction to Health Sociology*. (2nd Ed.). Melbourne: Oxford University Press.
- Goodwin, James C. (2005). *Research in Psychology: Methods and Design*. Hoboken, NJ: John Wiley & Sons.

- Gurbutt, R. (2006) *Nurses' clinical decision making*. Oxford: Radcliffe.
- Harms, L. (2005). *Understanding Human Development: A Multidimensional Approach*. Melbourne: Oxford University Press.
- Jones, K., & Creedy, D. (2008). *Health and Human Behaviour*. (2nd Ed.). Melbourne: Oxford University Press.
- Kerslake, P. (2006). *Life, Happiness and Cancer: Survive with Action and Attitude*. Wellington, NZ: Steele Roberts Ltd.
- Lee, C., & Glynnowens, R. (2002). *The Psychology of Men's Health*. Buckingham. Open University Press.
- Lupton, D. (1994). *Medicine as culture: Illness, Disease and the Body in Western Societies*. London: Sage Publications.
- McLennan, G., Ryan, A. & Spoonley, P. (2004). *Exploring Society: Sociology for New Zealand Students*. Auckland: Pearson Education New Zealand.
- Macpherson, C., Spoonley, P. & Anae, M. (Eds.). (2000). *Tangata o te moana nui: The evolving identities of Pacific peoples in Aotearoa New Zealand*.
- Ministry of Health. (2002). *Reducing Inequalities*. Wellington: Ministry of Health.
- Ministry of Health. (2002). *He Korowai Oranga (Maori Health Strategy)*. Wellington. Ministry of Health.
- Ministry of Health. (2004). *Tupu Ola Moui: The Pacific Health Chart Book*. Wellington, NZ: Ministry of Health.
- Ministry of Health. (2005). *New Zealand Cancer Control Strategy: Action Plan 2005-2010*. Wellington: Ministry of Health.
- Nettleton, S. (1995). *The Sociology of Health and Illness*. Cambridge: Polity Press
- Ratima, M.M. (2001). *Kia uruwru mai a harora: Being Healthy, Being Maori*. Conceptualising Maori health promotion. Unpublished dissertation.
- Santrock, J.W. (2008). *Life-Span Development*. (11th Ed.). Boston: McGraw-Hill.
- Sarafino, E.P. (2002). *Health Psychology: Biopsychosocial interactions*. (4th Ed.). New York: Wiley.
- Spoonley, P. (1993). *Racism and Ethnicity*. Auckland: Oxford University Press.
- State Services Commission. (2004). *The Treaty or Waitangi*. Wellington. State Services Commission.
- Swan, R. (1996). *The Big C: My experience with Cancer*. Auckland: Hoddermoa Beckett Publishers.
- Thompson, C., & Dowding, D. (Eds.). (2002). *Clinical decision making and judgement in nursing*. Edinburgh: Churchill Livingstone.
- Weiten, W. (2004). *Psychology: Themes and Variations*. (6th Ed.). Brooks/Cole.
- Wepa, D; (2005). *Cultural safety in Aotearoa NZ*. Auckland: Pearson Education NZ.
- White, P. (2005). (Ed.). *Biopsychosocial Medicine: An Integrated Approach to Understanding Illness*. Oxford: Oxford University Press.

15. Healthcare Communication

| | |
|----------------------------|--|
| Reference Number : | MERA 114 |
| Date : | July 2010 |
| Duration : | 50 contact hours and 62.5 hours of independent learning |
| Points : | 9 |
| Aim : | To introduce students to the foundations of healthcare communication skills and strategies and apply these to the radiation therapy setting. |
| Learning Outcomes : | On completion of this paper the successful student will be able to : |

1. describe core qualities and skills involved in establishing a healthcare professional-patient relationship in the radiation therapy setting;
2. demonstrate an understanding of core verbal and non-verbal communication skills in a range of contexts;
3. analyse different social, professional and personal value bases in the provision of healthcare;
4. identify the principles of culturally safe healthcare practice in the radiation therapy setting.

Content

Corresponding to Learning Outcome 1

- (a) Core qualities, attitudes and skills of a healthcare professional
Social and emotional intelligence
 - Empathy
 - Rapport
 - Respect
- (b) Professional relationships in the health care setting: patients, their families and colleagues
 - Ethical practice
 - Trust
 - Control
 - Self-disclosure
 - Self-care and self-reflection

Corresponding to Learning Outcome 2

- (a) Core verbal and nonverbal communication skills in health care relationships
 - multidimensional approach to listening
 - communication microskills: verbal and nonverbal
 - affirm, motivate, and educate others
- (b) Cross cultural communication

- (c) Communication contexts
 - environmental
 - social and political
 - ethical
- (d) Interviewing skills
- (e) Communication within healthcare teams
- (f) Speaking to a group

Corresponding to Learning Outcome 3

- (a) Personal values and moral development
- (b) Professional values in health care
- (c) Social values in health care

Corresponding to Learning Outcome 4

- (a) Cultural diversity, cultural safety and cultural competence
- (b) Social and personal attitudes towards diversity and equality
 - prejudice, stereotyping, discrimination and stigma
- (c) Professional culturally safe practice in New Zealand

Suggested Learning and Teaching Approaches :

The learning outcomes of this paper 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;
- 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 assignment = 50% of total mark
- one observational analysis = 50% of total mark
 - role play (10%)
 - peer evaluation (15%)
 - assessor evaluation (25%)

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

Reporting Results to Students

Results will be reported to students as follows:

| | |
|---------------------|-----|
| Course work, out of | 100 |
| TOTAL | 100 |

Student result notices will carry grades from A to E.

Resources

- Andrews, M.M., & Boyle, J.S. (2003). *Transcultural concepts in nursing care*. (4th Ed.). Philadelphia: Lippincott Williams & Wilkins.
- Berglund, C. & Saltman, D. (Eds.). (2002). *Communication in health care*. Oxford University Press: Melbourne.
- Durie, M. (1998). *Whaiora: Maori health development*. (2nd Edition). Auckland: Oxford University Press.
- Durie, M. (2001). *Mauri ora: The dynamics of Maori health*. Auckland. Oxford University Press.
- Egan, G. (2007). *The skilled helper: A problem-management and opportunity-development approach to helping*. Belmont, CA: Thomson Brooks/Cole.
- Harms, L. (2007). *Working with people*. Melbourne: Oxford University Press.
- Hosley, J. & Molle, E.A. (2006). *A practical guide to therapeutic communication for health professionals*. St Louis, Mo.: Saunders Elsevier.
- Leininger, M. M., and McFarland, M. R. (2006). (Eds.). *Culture care diversity and universality: a worldwide nursing theory*. Sudbury, MA: Jones and Bartlett.
- Leininger, M.M., & McFarland, M.R. (2002). *Transcultural nursing: concepts, theories, research and practice*. New York: McGraw-Hill.
- Ministry of Health. (2004). *Tupu Ola Moui: The Pacific Health Chart Book*. Wellington, NZ: Ministry of Health.
- Ministry of Health (2003). *New Zealand Cancer Control Strategy*. Wellington, NZ: Ministry of Health.
- Ministry of Health (2002). *He Korowai Oranga (Maori Health Strategy)*. Wellington., NZ: Ministry of Health.
- Nursing Council of New Zealand. (2005). *Guidelines for cultural safety, the Treaty of Waitangi and Maori health in nursing education and practice*. Wellington, NZ: Nursing Council of New Zealand.
- Platt, F.W. & Gordon, G.H. (2004). *Field guide to the difficult patient interview*. Philadelphia: Lippincott Williams & Wilkins.
- Satcher, D., Pamies, R.J. & Woelfl, N.N. (2006). *Multicultural medicine and health disparities*. New York: McGraw-Hill.
- Spoonley, P., Pearson, D.G., & Macpherson, C. (2004). (Eds.). *Tangata, tangata: the changing contours of New Zealand*. Southbank, Vic.: Thomson.
- State Services Commission. (2004). *The Treaty of Waitangi*. Wellington. State Services Commission.
- The Journal of Multicultural Nursing and Health [electronic resource].
- Thompson, N. (2002). *People skills*. Basingstoke: Palgrave.
- Verderber, K.S. & Verderber, R.F. (2004). *Inter-act: Interpersonal communication concepts, skills and contexts*. New York: Oxford University Press.
- Wepa, D; (2005). *Cultural safety in Aotearoa NZ*. Auckland: Pearson Education NZ.

16. Radiation Technology I

| | |
|---------------------------------|---|
| Reference Number : | MERA 115 |
| Date : | February 2010 |
| Duration : | 90 contact hours and 135 hours of independent learning |
| Points : | 18 |
| Aim : | To introduce students to the basic principles of radiation physics, the application to radiation technology and the use of radiation therapy equipment. |
| Recommended Entry Level: | Entry to the programme |
| Learning Outcomes : | On completion of this paper the successful student will be able to: |

1. demonstrate an understanding of general physical principals in relation to radiation therapy;
2. discuss the basic physics of X and gamma radiation;
3. describe the principles of radiation protection and safety;
4. describe the principles of construction and operation of radiation therapy and imaging equipment;
5. describe the principles of diagnostic imaging technologies;
6. demonstrate an understanding of the use of computers and their applications.

Content

Corresponding to Learning Outcome 1

- (a) Measurement – units, uncertainties
- (b) Systematic and random errors
- (c) Properties of electromagnetic radiation
- (d) Light sources (point sources, extended sources, lasers)
- (e) Electric charge, fields, potential
- (f) DC circuits and electrical measurements
- (g) Alternating current and rectification

Corresponding to Learning Outcome 2

- (a) Ionizing radiation, exposure, dose
- (b) Production of X-rays
- (c) Radioactive decay and the production of gamma rays
- (d) Interaction of radiation with matter, absorption processes
- (e) Measurement of radiation

Corresponding to Learning Outcome 3

- (a) Radiation protection principles
- (b) Radiation safety legislation
- (c) Personnel monitoring

Corresponding to Learning Outcome 4

- (a) Kilovoltage X-ray units, power supplies and x-ray tubes
- (b) Megavoltage X-ray units, linear accelerator technology

Corresponding to Learning Outcome 5

- (a) Radiographic imaging, contrast agents, film, fluoroscopy
- (b) Digital imaging, digital detectors, digital image processing
- (c) CT
- (d) MRI
- (e) Ultrasound
- (f) Nuclear medicine imaging

Corresponding to Learning Outcome 6

- (a) Computer hardware and operation
- (b) Software applications (word processing, spreadsheets, PowerPoint)

Suggested Learning and Teaching Approaches :

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

- lectures
- student centred tutorials
- laboratory demonstrations and practical sessions

Assessment of Learning Outcomes :

Summative assessment will consist of the following :

- one test = 20% of total mark
- one test = 20% of total mark
- one test = 20% of total mark
- one final 2 hour written examination = 40% of total mark

50% must be gained in the coursework and the computer assignment must be successfully completed to be eligible to take the final examination.

A pass will be awarded to all students who gain a minimum of 50% in the examination and 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

- European Society for Therapeutic Radiography and Oncology (ESTRO) <http://www.estro.org>
- American Association of Physicists in Medicine (AAPM) <http://www.aapm.org/>
- International Atomic Energy Agency (IAEA) <http://www.iaea.org/>
- Varian Medical Systems <http://www.varian.com/>
- Elekta <http://www. Elekta.com/>
- GE Healthcare <http://www.gehealthcare.com>
- US National Cancer Institute <http://www.cancer.gov/>
- Siemens Medical <http://www.medical.siemens.com>

Textbooks

- Ball, J., & Moore, A. (1997) *Essential Physics for Radiographers*. Blackwell Scientific.
- Bomford, C.K. & Kunkler, I.H. (2003) *Walter and Miller's textbook of radiotherapy : radiation, physics, therapy and oncology*. (6th ed.) Edinburgh, Churchill Livingstone.
- Bushong, S C. (2001) *Radiologic science for technologists : physics, biology, and protection*. St. Louis : Mosby.
- Bushberg, J. T. (2002) *The essential physics of medical imaging*. Philadelphia, Pa.; London : Lippincott Williams & Wilkins.
- Chesney, D., & Chesney, M. (1984). *Chesney's equipment for student radiographers*. Blackwell Scientific.
- Graham, D.T., Cloke, P. & Vosper, M. (2007). *Principles of Radiological Physics*. (5th Edition). Churchill Livingstone.
- Giancoli, D.C. (2005). *Physics - Principles with Applications*. (6th Edition). Prentice Hall, USA.
- Greene, D & Williams, P. (1997) *Linear accelerators for radiation therapy* Institute of Physics Publishing
- Guy, G. & fytche, D. (2005) *An introduction to the principles of medical imaging*. London : Imperial College Press.
- Hendee, W. & Ritenour R. (2002). *Medical imaging physics*. New York ; Chichester : Wiley-Liss,
- Hazle, J D. & others (1998) *Imaging in radiation therapy : American Association of Physicists in Medicine 1998 Summer School proceedings*, University of Wisconsin, Madison, Wisconsin.. Madison, WI : Published for the American Association of Physicists in Medicine by Medical Physics Pub.
- Karzmark, C. J (1998) *A primer on theory and operation of linear accelerators in radiation therapy*. Madison, Wis. Medical Physics Pub.
- Khan, F. (2003). *The Physics of Radiation Therapy*. (3rd Edition). Williams and Wilkins, Baltimore.
- Morris, S. (2001). *Radiotherapy physics and equipment*. Churchill Livingstone.
- Purdy, J A. (2001) *3-D conformal and intensity modulated radiation therapy : physics & clinical applications*. Madison, WI, U.S.A. Advanced Medical Pub.
- Roberts, D., & Smith, N. (1988). *Radiographic Imaging*. Churchill Livingstone.
- Stanton, R., & Stinton, D. (1992). *An Introduction to Radiation Oncology Physics*. Medical Physics Publishing.
- Washington, C.M., & Leaver, D.T. (2009) *Principles and Practice of Radiation Therapy*. (3rd Edition). Mosby, St Louis, Missouri.

17. Radiation Therapy and Oncology I

| | |
|---------------------------------|--|
| Reference Number: | MERA 116 |
| Date: | February 2010 |
| Duration: | 150 hours contact and 225 hours independent learning |
| Points: | 30 |
| 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 paper the successful student will be able to describe and discuss in some detail: |

1. legal and ethical issues related to radiation therapy and patient care;
2. pathology of common tumours and the ways in which they are classified;
3. treatment modalities used to treat benign and malignant disease;
4. radiation therapy techniques used in the treatment of disease;
5. care a patient may require when receiving radiation therapy;
6. chemotherapy for patients with malignant disease;
7. pharmacological approach to patient care during radiation therapy;
8. commonly used mould room techniques;
9. clinical trials.

Content

Corresponding to Learning Outcome 1

- (a) Code of Ethics
- (b) Ethical issues and privacy
- (c) Relevant legislation
- (d) Informed consent
- (e) Professional organizations/Registration Boards
- (f) Introduction to the health system
- (g) Use of clinical information

Corresponding to Learning Outcome 2

- (a) Malignant tumours
- (b) Benign tumours treated with radiation therapy
- (c) Epidemiology
- (d) Aetiology
- (e) Classification systems

Corresponding to Learning Outcome 3

- (a) Surgery
- (b) Radiation therapy
- (c) Chemotherapy (including hormone therapy)
- (d) Other treatment modalities
- (e) Principles underlying the choice of treatment

Corresponding to Learning Outcome 4

- (a) Radical intent
- (b) Palliative intent
- (c) Pre and post operative techniques
- (d) Adjuvant techniques

Corresponding to Learning Outcome 5

- (a) Local reactions to radiation therapy
- (b) Systemic reactions to radiation therapy
- (c) Blood counts
- (d) Diet and fluid intake
- (e) Patient information
- (f) Manual handling
- (g) Infection control
- (h) Specific patient needs, ie. catheter/colostomy, bedpan

Corresponding to Learning Outcome 6

- (a) Principles of chemotherapy for cancer
- (b) Side effects of chemotherapy

Corresponding to Learning Outcome 7

- (a) Pharmacological principles
- (b) Adverse reactions to drugs
- (c) Medications used for radiation therapy reactions
- (d) Management of side effects including chemotherapy

Corresponding to Learning Outcome 8

- (a) Immobilisation devices
- (b) Tissue compensators
- (c) Electron cut outs
- (d) Shielding
- (e) Bolus

Corresponding to Learning Outcome 9

- (a) Phase I, I, III, IV clinical trials
- (b) Clinical trial groups in radiation therapy (e.g. TROG)
- (c) Publications

Suggested Learning and Teaching Approaches:

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

- student centred tutorials with an emphasis on class discussion and debate;
- the use of media such as videos, journals, texts, newspaper articles and television will provide a rich source of material for discussion, and exploration;
- three one week visits to a radiation therapy department

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 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% minimum in the examination and 50% overall.

Reporting Results to Students

Student result notices will carry grades from A to E.

Resources

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

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

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

Bomford, C., Kunkler, I., & Sherriff, S. (2003). *Walter & Miller's Textbook of Radiotherapy.* (6th Edition). Churchill Livingstone.

Bryant, B., & Knights K. (2007). *Pharmacology for Health Professionals* (2nd Edition). Mosby Elsevier, Sydney

Clinical Pharmacology made Incredibly Easy (2nd Edition) Lippincott Williams and Wilkins 2003

Coia, L., & Moycan, D. (1989). *Introduction to Clinical Radiation Oncology.* Medical Physics Publishing Co-Op, Madison.

Faithfull, S., & Wells, M. (2003). *Supportive Care in Radiotherapy* Churchill Livingstone, Edinburgh

Griffiths, S., & Short, C. (1994). *Radiotherapy : Principles to Practice.* Churchill Livingstone.

Hass, M.L., Hogle, W.P., Moore-Higgs, G.J. & Gosselin-Acomb, T.K. (2007). *Radiation Therapy: A guide to patient care.* Mosby Elsevier, St Louis.

International Commission on Radiation Units and Measurements: (1993) Prescribing, Recording, and Reporting Photon Beam Therapy. (*ICRU Report 50*)

International Commission on Radiation Units and Measurements: (1999) Prescribing, Recording, and Reporting Photon Beam Therapy. Supplement to ICRU 50 (*ICRU Report 62*).

Moller, T.B. & Reif, E. (2006). *Pocket Atlas of Sectional Anatomy, CT and MRI, Vol 1 & Vol 2.* (3rd Edition). Thieme, New York.

Neal, A. & Hoskin, P. (2003). *Clinical Oncology - Basic Principles and Practice.* (3rd Edition). Edward Arnold.

Washington, C.M. & Leaver, D.T. (2009). *Principles and Practice of Radiation Therapy.* (3rd Edition). Mosby, St Louis, Missouri.

18. Radiation Therapy Planning Concepts I

| | |
|---------------------------------|---|
| Reference Number: | MERA 117 |
| Date: | July 2010 |
| Duration: | 70 hours contact and 105 hours independent learning |
| Points: | 14 |
| Aim: | To enable students to gain a basic understanding of planning the treatment of malignant disease |
| Recommended Entry Level: | Entry to programme |
| Learning Outcomes: | On completion of this paper the successful student will be able to demonstrate: <ol style="list-style-type: none">1. knowledge of basic calculations used in radiation therapy;2. an understanding of manual planning principles;3. knowledge and performance of basic principles and concepts of computer planning. |

Content

Corresponding to Learning Outcome 1

- (a) Calibration conditions
- (b) Inverse square law
- (c) Attenuation factors for SSD and SAD techniques
- (d) Manual calculations of basic radiation therapy SSD and SAD treatment techniques

Corresponding to Learning Outcome 2

- (a) Isodose distributions
- (b) ICRU 50/62
- (c) Normalisation
- (d) Weighting
- (e) Beam energy, d-max, exit dose and arrangement
- (f) Organs at risk

Corresponding to Learning Outcome 3

- (a) Isodose distributions
- (b) Computer planning principles
- (c) ICRU 50/62
- (d) Normalisation
- (e) Weighting
- (f) Beam energy, d-max, exit dose and arrangement
- (g) Inhomogeneities

- (h) Wedges
- (i) Monitor Units
- (j) Field verification
- (k) Organs at risk

Suggested Learning and Teaching Approaches:

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

- practical laboratory tutorials for computer planning
- student centred tutorials with an emphasis on class discussion and debate
- the use of media such as videos, journals, and texts, will provide a rich source of material for discussion, and exploration;

Assessment of Learning Outcomes:

Summative assessment will consist of the following:

- one test = 40% of total mark
- one assignment = 30% of total mark
- one viva = 30% of total mark

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

Reporting Results to Students

Student result notices will carry grades from A to E.

Resources

Eclipse Planning System

Textbooks

- Bomford, C., Kunkler, I., & Sherriff, S. (2003). *Walter & Miller's Textbook of Radiotherapy*. (6th Edition). Churchill Livingstone.
- Ball, J., & Moore, A. (1997) *Essential Physics for Radiographers*. Blackwell Scientific.
- Bomford, C.K. & Kunkler, I.H. (2003) *Walter and Miller's textbook of radiotherapy : radiation, physics, therapy and oncology*. (6th ed.) Edinburgh, Churchill Livingstone.
- Bushberg, J. T. (2002) *The essential physics of medical imaging*. Philadelphia, Pa.; London : Lippincott Williams & Wilkins.
- Giancoli, D.C. (2005). *Physics - Principles with Applications*. (6th Edition). Prentice Hall, USA.
- Coia, L., & Moycan, D. (1989). *Introduction to Clinical Radiation Oncology*. Medical Physics Publishing Co-Op, Madison.
- Greene, D & Williams, P. (1997) *Linear accelerators for radiation therapy* Institute of Physics Publishing
- Griffiths, S., & Short, C. (1994). *Radiotherapy : Principles to Practice*. Churchill Livingstone.
- Hass, M.L., Hogle, W.P., Moore-Higgs, G.J. & Gosselin-Acomb, T.K. (2007). *Radiation Therapy: A guide to patient care*. Mosby Elsevier, St Louis.
- Hendee, W. & Ritenour R. (2002). *Medical imaging physics*. New York ; Chichester : Wiley-Liss,
- International Commission on Radiation Units and Measurements: (1993) Prescribing, Recording, and Reporting Photon Beam Therapy. (*ICRU Report 50*)

- International Commission on Radiation Units and Measurements: (1999) Prescribing, Recording, and Reporting Photon Beam Therapy. Supplement to ICRU 50 (*ICRU Report 62*).
- Khan, F. (2003). *The Physics of Radiation Therapy*. (3rd Edition). Williams and Wilkins, Baltimore.
- Moller, T.B. & Reif, E. (2006). *Pocket Atlas of Sectional Anatomy, CT and MRI, Vol 1 & Vol 2*. (3rd Edition). Thieme, New York.
- Morris, S. (2001). *Radiotherapy physics and equipment*. Churchill Livingstone.
- Purdy, J A. (2001) *3-D conformal and intensity modulated radiation therapy : physics & clinical applications*. Madison, WI, U.S.A. Advanced Medical Pub.
- Stanton, R., & Stinton, D. (1992). *An Introduction to Radiation Oncology Physics*. Medical Physics Publishing.
- Washington, C.M. & Leaver, D.T. (2009). *Principles and Practice of Radiation Therapy*. (3rd Edition). Mosby, St Louis, Missouri.

STAGE TWO PAPERS

MERA 211 Radiation Therapy Practice II

MERA 212 Principles of Research

MERA 213 Advanced Healthcare Communication

MERA 214 Radiation Technology II

MERA 215 Radiation Therapy and Oncology II

MERA 216 Radiation Therapy Planning Concepts II

19. Radiation Therapy Practice II

| | |
|---------------------------------|--|
| Reference Number: | MERA 211 |
| Date: | February 2010 |
| Duration: | 640 hours contact and 110 hours independent learning. |
| Points: | 60 |
| Aim: | Consolidation of academic learning in Stage I: the student will gain knowledge and acquire skill to undertake the routine tasks of a radiation therapist, under supervision. |
| Recommended Entry Level: | Successful completion of all Stage I papers. |
| Learning Outcomes: | On completion of this paper the successful student will be able to across three domains: CT/sim, planning and treatment; <ol style="list-style-type: none">1. demonstrate knowledge and efficient practice;2. recognise patient needs and/or significant changes in patients' condition;3. demonstrate appropriate verbal and nonverbal communication skills;4. demonstrate the ability to work in a healthcare team;5. demonstrate appropriate self-management techniques;6. demonstrate safe practices in the workplace;7. demonstrate the ability to identify problems in the clinical setting;8. develop an increasing awareness of quality assurance;9. demonstrate reflective practice. |

Content

Corresponding to Learning Outcome 1

- (a) Description of routine radiation therapy practice
- (b) Rationale for routine radiation therapy practice
- (c) Comprehend the practical application of theory and technical skills
- (d) Understand workflow
- (e) Patient safety and comfort

Corresponding to Learning Outcome 2

- (a) Physical, social and emotional needs of patients
- (b) Treatment reactions and management, including medication
- (c) Expected response to treatment
- (d) Indicators for reassessing patient condition
- (e) Appropriate referral

Corresponding to Learning Outcome 3

- (a) Written records and reports
- (b) Verbal reporting
- (c) Verification of information
- (d) Patient communication
- (e) Staff communication
- (f) Listening skills
- (g) Establishing rapport

Corresponding to Learning Outcome 4

- (a) Roles of multi-disciplinary team members
- (b) Channels of communication
- (c) Sources of conflict and dealing with conflict

Corresponding to Learning Outcome 5

- (a) Emotional responses RTs may have when working with patients and colleagues
- (b) Appropriate coping strategies
- (c) Time management
- (d) Initiative/responsibility

Corresponding to Learning Outcome 6

- (a) Potential hazards and risks
- (b) Safety regulations, procedures and protocols
- (c) Equipment faults

Corresponding to Learning Outcome 7

- (a) Identification of problems in the clinical setting

Corresponding to Learning Outcome 8

- (a) Quality management systems
- (b) Clinical quality assurance procedures

Corresponding to Learning Outcome 9

- (a) Observe, participate in, question and evaluate practice

Suggested Learning and Teaching Approaches

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

- clinical practice in Department A;
- tutorials with an emphasis on group discussion;
- seminar, case study, project presentations, journal club, study days and conferences;
- accessing media: journals, texts, newspaper articles and television provide a rich source of material for discussion, exploration;
- utilising a variety of small scale investigative techniques, participation in audit and research culminating in evidence based practice.

Assessment of Learning Outcomes:

Summative assessment will consist of all outcomes within each of the three domains:

- rotational assessment (sim/CT) = Pass/Fail
- rotational assessment (planning) = Pass/Fail
- rotational assessment (treatment) = Pass/Fail

And

- one clinical journal = Pass/Fail

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

Students will need to gain 640 clinical hours for the semester in which they have enrolled.

Reassessment: A reassessment can occur in one rotational assessment and for the clinical journal.

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.

Textbooks

Bomford, C., Kunkler, I., & Sherriff, S. (2003). *Walter & Miller's Textbook of Radiotherapy*. (6th Edition). Churchill Livingstone.

Hass, M.L., Hogle, W.P., Moore-Higgs, G.J. & Gosselin-Acomb, T.K. (2007). *Radiation Therapy: A guide to patient care*. Mosby Elsevier, St Louis.

International Commission on Radiation Units and Measurements: (1993) Prescribing, Recording, and Reporting Photon Beam Therapy. (*ICRU Report 50*)

International Commission on Radiation Units and Measurements; (1999) Prescribing, Recording, and Reporting Photon Beam Therapy. Supplement to ICRU 50 Report (*ICRU Report 62*)

Faithfull, S., & Wells, M. (2003). *Supportive Care in Radiotherapy*. Churchill Livingstone, UK.

Moeller, T.B. & Reif, E. (2006). *Pocket Atlas of Sectional Anatomy, CT and MRI, Vol 1 & Vol 2*. (3rd Edition). Thieme, New York.

Rubin, P. (2001). *Clinical Oncology: A multidisciplinary approach for physicians and students*. (8th Edition). W.B. Saunders Company, Philadelphia, Pennsylvania.

Washington, C.M., & Leaver, D.T. (2009). *Principles and Practice of Radiation Therapy*. (3rd Edition). Mosby, St Louis, Missouri.

Webber, E.C., Vilensky, J.A. & Carmichael, S.W. (2009). *Netter's Concise Radiologic Anatomy*. Saunders, an imprint of Elsevier Inc.

20. Principles of Research

| | |
|---------------------------------|--|
| Reference Number: | MERA 212 |
| Date: | July 2010 |
| Duration: | 25 contact hours and 50 hours of independent learning |
| Points: | 6 |
| Aim: | Student will have a basic understanding of different research methodologies that underpin quantitative and qualitative research. |
| Recommended Entry Level: | Successful completion of all Stage I papers. |
| Learning Outcomes: | On completion of this paper the successful student will be able to: <ol style="list-style-type: none">1. describe the difference between quantitative or qualitative research;2. demonstrate a basic understanding of different study designs;3. demonstrate a basic understanding of the process involved in obtaining ethical approval for research involving human subjects;4. produce a critical analysis of three research papers on a chosen topic. |

Content

Corresponding to Learning Outcome 1

- (a) Quantitative versus qualitative research
- (b) Literature reviews versus primary research

Corresponding to Learning Outcome 2

- (a) Study designs of quantitative methodologies: cell based studies, animal studies, clinical trials, questionnaire-based studies
- (b) Study designs of qualitative methodologies: questionnaire-based studies: quality of life, focus groups, interviews, ethnographic research, observational research, action based research, critical theory research
- (c) Limitations inherent to different study designs: confounding factors, interpretation of scope of results
- (d) Statistical analyses appropriate for different study designs

Corresponding to Learning Outcome 3

- (a) Research ethics
- (b) Participant information sheets and informed consent
- (c) Maori Consultation
- (d) Locality assessment approval

Corresponding to Learning Outcome 4

- (a) Description and analysis of three research papers

Suggested Learning and Teaching Approaches

The learning outcomes of this paper should be achieved by the following:

- Lectures to introduce research concepts and that invite student participation and debate;
- Student centred tutorials with an emphasis on class discussion and debate;
- Workshops by guest speakers who will contribute to the overall research experience from their own unique research background.

Assessment of Learning Outcomes

Summative assessment will consist of the following:

- 1 test = 50% of total mark
- 1 assignment = 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: Total out of 100

Student result notices will carry grades from A to E

Resources

- Davidson, C. & Tolich, M. (2007). *Social Science Research in New Zealand*. Pearson, Prentice Hall, Australia.
- Finlay, L. & Ballinger, C. (2006). *Qualitative Research for Allied Health Professionals: Challenging Choices*. John Wiley & Sons.
- Liamputtong, P. (2009). *Qualitative Research Methods*. (3rd Edition). Oxford University Press, Australia & New Zealand.
- Peat, J. (2001). *Health Science Research. A handbook of quantitative methods*. Allen & Unwin, NSW, Australia.
- Polgar, S., & Thomas, S. (2008). *Introduction to Research in the Health Sciences*. (5th Edition). Churchill Livingstone.

21. Advanced Healthcare Communication

| | |
|---------------------------------|---|
| Reference Number: | MERA 213 |
| Date: | July 2010 |
| Duration: | 50 contact and 75 hours of independent learning |
| Points: | 10 |
| Aim: | To enable the student to develop effective interpersonal skills when working with patients in pain (curative and palliative) and/or terminally ill. |
| Recommended Entry Level: | Successful completion of MERA 113: Health and Human Behaviour and MERA 114: Healthcare Communication. |
| Learning Outcomes: | On completion of this paper the successful student will be able to: |

1. describe factors that may influence an individual's perception of pain, including cancer-related pain (curative and palliative), and relate these to the role of the radiation therapist;
2. identify non-pharmacological methods of pain management and relate these to the role of the radiation therapist;
3. discuss the psychosocial impact of terminal illness on an individual and their family;
4. identify appropriate responses to individuals and their family who are coping with terminal illness;
5. discuss appropriate personal management strategies to lessen the impact on self of working with patients who are in pain and/or terminally ill;
6. discuss the impact of delivering palliative treatment on teams.

Content

Corresponding to Learning Outcome 1

- (a) Causes and classifications of pain
- (b) Basic physiology of pain perception
- (c) Factors that modify pain perception - cultural, social, psychological and physical
- (d) Basic pain assessment in the radiation therapy setting

Corresponding to Learning Outcome 2

- (a) Strategies to assist patients cope with pain
 - Physical therapies
 - Psychological and psychosocial methods of pain management

Corresponding to Learning Outcome 3

- (a) Attitudes towards death and dying in self and others
- (b) Psychosocial consequences of terminal illness for the individual and family
- (c) Cross cultural differences in coping with hospitalisation, illness and terminal illness
- (d) Models of grieving, including contextual influences on grief
- (e) Basic grief assessment and intervention

Corresponding to Learning Outcome 4

- (a) Effective communication skills when working with patients, in pain and/or grieving, and their family in the radiation therapy setting
- (b) Counselling as a helping tool
- (c) Cultural competence in palliative context
- (d) Identification of support systems for patient receiving radiation therapy, in pain and/or with palliative intent, and their family

Corresponding to Learning Outcome 5

- (a) Identification of grief responses in self
- (b) Management of self when working with palliative intent
- (c) Strategies to minimise effects on self when working in a palliative context

Corresponding to Learning Outcome 6

- (a) Impact of delivering palliative treatment on teams
- (b) Strategies to promote effective collaboration and participation within teams when treating patients with palliative intent

Suggested Learning and Teaching Approaches

The learning outcomes of this paper 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 case study = 40% of total mark
- one assignment = 30% of total mark
- one assignment = 30% 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

- Andrews, M.M. & Boyle, J.S. (2003). *Transcultural concepts in nursing care*. Philadelphia: Lippincott Williams & Wilkins.
- Aranda, S., & O'Connor, M.M. (2003). *Palliative care nursing: a guide to practice*. Melbourne: Ausmed Publications.
- Berger, A.M., Shuster, J.L., & von Roenn, J.H. (Eds.). (2007). *Principles and practice of palliative care and supportive oncology*. Philadelphia: Lippincott Williams & Wilkins.
- Berglund, C. (2004). *Ethics for health care*. (2nd Edition). Melbourne. Oxford University Press.
- Bruera, E.D., & Portenoy, R.K. (2003). *Cancer pain: assessment and management*. Cambridge: Cambridge University Press.
- Doka, K.J. (Ed.). (2007). *Living with grief: before and after the death*. Washington, D.C.: Hospice Foundation of America.
- Ferrell, B.R., & Coyle, N. (Eds.). (2001). *Textbook of palliative nursing*. Oxford; Oxford University Press.
- Gatenby, B.I. (1998). *For the rest of our lives: after the death of a child*. Auckland: Reed.
- Klass, D., Silverman, P.R., & Nickman, S.L. (1998). *Continuing bonds: new understandings of grief*. Washington DC: Taylor and Francis.
- Kubler-Ross, L. (1969). *On Death and Dying*. New York: Macmillan.
- Lloyd-Williams, M. (2003). *Psychosocial issues in palliative care*. Oxford: Oxford University Press.
- Main, C.J., & Spanswick, C.C. (Eds.). (2000). *Pain Management: An interdisciplinary approach*. Edinburgh: Harcourt Publishes Ltd.
- Ministry of Health (2001). *The New Zealand Palliative Care Strategy*. Wellington: Ministry of Health.
- Neimeyer, R.A. (Ed.). (2002). *Meaning reconstruction and the experience of loss*. (2nd Edition). Washington DC; American Psychological Association.
- Neuberger, J. (2004). *Dying well: a guide to enabling a good death*. Oxford: Radcliffe.
- Northouse, L.L., & Northouse, P.G. (1998). *Health communication*. (3rd Edition). Appleton & Hall, USA.
- Skevington, S. (1995). *Psychology of pain*. Chichester: Wiley.
- Stroebe, M. S. (2001). *Handbook of bereavement research: consequences, coping, and care*. Washington, D.C.: American Psychological Association.
- Strong, J. (Ed.). (2002). *Pain: a textbook for therapists*. Edinburgh: Churchill Livingstone.
- Victoria Hospice Society, Cairns, M., Thompson, M., & Wainwright, W. (2003). *Transitions in dying and bereavement: a psychosocial guide for hospice and palliative care*. Baltimore: Health Professions Press.
- Walsh-Burke, K. (2006). *Grief and loss: theories and skills for helping professionals*. Boston: Pearson Allyn & Bacon.
- Weiten, W. (2004). *Psychology: Themes and Variations*. (6th Edition). Brooks Cole.
- Worden, J. (2002). *Grief Counselling and Grief Therapy*. (3rd Edition). A Handbook for the Mental Health Practitioner. Springer, New York.

22. Radiation Technology II

| | |
|---------------------------------|--|
| Reference Number: | MERA 214 |
| Date: | July 2010 |
| Points: | 16 |
| Duration: | 100 contact and 100 hours of independent learning |
| Aim: | To enable students to apply their understanding of computers, radiation therapy equipment and imaging to the planning and delivery of radiation therapy. |
| Recommended Entry Level: | Successful completion of MERA 115: Radiation Technology I. |
| Learning Outcomes: | On completion of this paper the successful student will be able to: |

1. describe the role of the different types of radiation for use in radiation therapy;
2. describe the process for machine calibration and quality control;
3. describe radiation detection and measurement;
4. discuss quality assurance systems in radiation therapy;
5. discuss treatment and imaging technology in radiation therapy;
6. discuss the use of radioactive materials in radiation therapy.

Content

Corresponding to Learning Outcome 1

- (a) Photons – absorption processes
- (b) Electrons – absorption in tissue, depth doses, isodoses
- (c) Other particles, principally protons

Corresponding to Learning Outcome 2

- (a) Radiation detectors and calibration
- (b) Machine calibration

Corresponding to Learning Outcome 3

- (a) Radiation detectors for use in phantoms and on patients
- (b) Radiation measurement

Corresponding to Learning Outcome 4

- (a) Principles of quality assurance
- (b) Systems of quality assurance
- (c) Rationale for quality assurance

Corresponding to Learning Outcome 5

- (a) Imaging techniques: CBCT, OBI
- (b) IMRT and tomography
- (c) IGRT and Adaptive RT
- (d) Stereotactic techniques

Corresponding to Learning Outcome 6

- (a) Distinguish between sealed and unsealed sources
- (b) Brachytherapy loading techniques and delivery systems
- (c) Unsealed therapy procedures
- (d) Safety and quality assurance

Suggested Learning and Teaching Approaches

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

- lectures
- student centred tutorials
- laboratory demonstrations and practical sessions

Assessment of Learning Outcomes :

Summative assessment will consist of the following :

- one assignment = 20% of total mark
- one test = 20% of total mark
- one test = 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 a minimum of 50% in the examination and 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

European Society for Therapeutic Radiography and Oncology (ESTRO)

<http://www.estro.org>

American Association of Physicists in Medicine (AAPM) <http://www.aapm.org/>

International Atomic Energy Agency (IAEA) <http://www.iaea.org/>

Varian Medical Systems <http://www.varian.com/>

Elekta <http://www.elekta.com/>

GE Healthcare <http://www.gehealthcare.com>

US National Cancer Institute <http://www.cancer.gov/>

Siemens Medical <http://www.medical.siemens.com>

Textbooks

- Ball, J., & Moore, A. (1997) *Essential Physics for Radiographers*. Blackwell Scientific.
- Bomford, C.K. & Kunkler, I.H. (2003) *Walter and Miller's textbook of radiotherapy : radiation, physics, therapy and oncology*. (6th ed.) Edinburgh, Churchill Livingstone.
- Bushong, S C. (2001) *Radiologic science for technologists : physics, biology, and protection*. St. Louis : Mosby.
- Bushberg, J. T. (2002) *The essential physics of medical imaging*. Philadelphia, Pa.; London : Lippincott Williams & Wilkins.
- Graham, D.T., Cloke, P. & Vosper, M. (2007). *Principles of Radiological Physics*. (5th Edition). Churchill Livingstone.
- Guy, G. & Fytche, D. (2005) *An introduction to the principles of medical imaging*. London : Imperial College Press.
- Hendee, W. & Ritenour R. (2002). *Medical imaging physics*. New York ; Chichester : Wiley-Liss.
- Hazle, J D. & others (1998) *Imaging in radiation therapy : American Association of Physicists in Medicine 1998 Summer School proceedings*, University of Wisconsin, Madison, Wisconsin.. Madison, WI : Published for the American Association of Physicists in Medicine by Medical Physics Pub.
- Khan, F. (2003). *The Physics of Radiation Therapy*. (3rd Edition). Williams and Wilkins, Baltimore.
- Morris, S. (2001). *Radiotherapy physics and equipment*. Churchill Livingstone.
- Podgorsak, E.B., ed. (2005) *Radiation Oncology Physics: A Handbook For Teachers And Students* International Atomic Energy Agency Vienna, 2005
- Purdy, J A. (2001) *3-D conformal and intensity modulated radiation therapy : physics & clinical applications*. Madison, WI, U.S.A. Advanced Medical Pub.
- Washington, C.M., & Leaver, D.T. (2009) *Principles and Practice of Radiation Therapy*. (3rd Edition). Mosby, St Louis, Missouri.

23. Radiation Therapy and Oncology II

| | |
|---------------------------------|---|
| Reference Number: | MERA 215 |
| Date: | July 2010 |
| Duration: | 60 contact and 65 hours of independent learning |
| Points: | 10 |
| 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 MERA 116: Radiation Therapy and Oncology I. |
| Learning Outcomes: | On completion of this paper the successful student will be able to: |

1. discuss the oncology of and the clinical rationale for selecting appropriate treatment for the stated 'Site List' (tumours that are commonly treated clinically);
2. describe the pathology of tumours.

Content

Corresponding to Learning Outcome 1

Site List

- skin (SCC, BCC, melanoma)
 - urogenital (bladder, testes, prostate)
 - gynaecological (cervix, endometrium, ovary)
 - lymphoma (hodgkins and non-hodgkins lymphomas)
 - larynx
 - pituitary
- (a) Patient assessment methods
 - (b) Tumour characteristics
 - (c) Combined modality treatments with a focus on radiation therapy techniques (including palliation)
 - (d) Typical treatment reactions

Corresponding to Learning Outcome 2

- (a) Carcinogenesis and biology of cancer
- (b) Immunology and genetics
- (c) Pathology of tumours in Site List

Suggested Learning and Teaching Approaches

The learning outcomes of this paper 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.

Assessment of Learning Outcomes

Summative assessment will consist of the following :

- One group presentation = 30% of total mark
- One test = 30% 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% minimum in the examination and 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

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

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

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

Bomford, C.K. & Kunkler, I.H. (2003). *Walter & Miller's textbook of radiotherapy: radiation, physics, therapy and oncology.* (6th Edition). Churchill Livingstone.

Bryant, B., & Knights K. (2007). *Pharmacology for Health Professionals* (2nd Edition). Mosby Elsevier, Sydney

Clinical Pharmacology made Incredibly Easy (2nd Edition) Lippincott Williams and Wilkins 2003

Faithfull, S., & Wells, M. (2003). *Supportive Care in Radiotherapy* Churchill Livingstone, Edinburgh

Hass, M.L., Hogle, W.P., Moore-Higgs, G.J. & Gosselin-Acomb, T.K. (2007). *Radiation Therapy: A guide to patient care.* Mosby Elsevier, St Louis.

International Commission on Radiation Units and Measurements: (1993) Prescribing, Recording, and Reporting Photon Beam Therapy. (*ICRU Report 50*)

International Commission on Radiation Units and Measurements: (1999) Prescribing, Recording, and Reporting Photon Beam Therapy. Supplement to ICRU 50 (*ICRU Report 62*).

Moller, T.B. & Reif, E. (2006). *Pocket Atlas of Sectional Anatomy, CT and MRI, Vol 1 & Vol 2.* (3rd Edition). Thieme, New York.

- Neal, A. & Hoskin, P. (2003). *Clinical Oncology - Basic Principles and Practice*. (3rd Edition). Edward Arnold.
- Ruben, P. (2001). *Clinical Oncology: A multidisciplinary approach for physicians and students*. (8th Edition). W.B. Saunders Company, Philadelphia, Pennsylvania.
- Tortora, G.J. & Derrickson, B. (2009). *Principles of Anatomy and Physiology*. (12th Edition). John Wiley & Sons.
- Washington, C.M. & Leaver, D.T. (2009). *Principles and Practice of Radiation Therapy*. (3rd Edition). Mosby, St Louis, Missouri.
- Webber, E.C., Vilensky, J.A. & Carmichael, S.W. (2009). *Netter's Concise Radiologic Anatomy*. Saunders, an imprint of Elsevier Inc.

24. Radiation Therapy Planning Concepts II

| | |
|---------------------------------|---|
| Reference Number: | MERA 216 |
| Date: | July 2010 |
| Duration: | 100 Contact and 125 hours of independent learning |
| Points: | 18 |
| Aim: | To enable students to understand the concepts of radiation therapy treatment planning to enable the planning of standard techniques |
| Recommended Entry Level: | Successful completion of MERA 117: Radiation Therapy Planning Concepts I. |
| Learning Outcomes: | On completion of this paper the successful student will be able to: <ol style="list-style-type: none">1. demonstrate knowledge and application of calculations used in radiation therapy;2. demonstrate knowledge, application of principles and concepts of computer planning for critiquing standard techniques;3. demonstrate an understanding of imaging and anatomy, relevant to computer planning;4. discuss the effects of radiation on biological systems. |

Content

Corresponding to Learning Outcome 1

- (a) Calibration conditions
- (b) Inverse square law
- (c) Attenuation factors for SSD and SAD techniques
- (d) Manual calculations of radiation therapy SSD and SAD treatment techniques including shielding and extended SSD
- (e) Justification of factors used and resulting MU

Corresponding to Learning Outcome 2

- (a) Consolidate knowledge of computer planning principles by producing a range of standard radiation therapy plans. Principles to include:
 - Isodose distributions
 - ICRU 50/62
 - Normalisation
 - Weighting
 - Beam energy, d-max, exit dose and arrangement
 - Inhomogeneities
 - Wedges

- Monitor Units
- Field Verification
- Organs at risk
- Contouring methods
- Volume transfer

(b) Apply computer planning principles by students critiquing the plans produced

Corresponding to Learning Outcome 3

- (a) Applied anatomy and imaging
- (b) Diagnostic imaging e.g. CT, SPECT, PET, MRI
- (c) Image fusion

Corresponding to Learning Outcome 4

- (a) Radiation chemistry
- (b) Mammalian cell sensitivity
- (c) Physical modification of radiation exposure
- (d) Acute radiation syndrome
- (e) Late effects of radiation

Suggested Learning and Teaching Approaches

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

- practical laboratory tutorials for computer planning;
- student centred tutorials with an emphasis on class discussion and debate;
- the use of media such as videos, journals, and texts, will provide a rich source of material for discussion, and exploration.

Assessment of Learning Outcomes

Summative assessment will consist of the following:

- one assignment (imaging) = 10%
- one assignment (dosimetry/calculations) = 30%
- one test (radiobiology) = 20%
- one VIVA = 40%

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

Reporting Results to Students

Student result notices will carry grades from A to E

Resources

Eclipse Planning System

Textbooks

Ball, J., & Moore, A. (1997) *Essential Physics for Radiographers*. Blackwell Scientific.

Bomford, C.K. & Kunkler, I.H. (2003) *Walter and Miller's textbook of radiotherapy : radiation, physics, therapy and oncology*. (6th ed.) Edinburgh, Churchill Livingstone.

Bushberg, J. T. (2002) *The essential physics of medical imaging*. Philadelphia, Pa.; London : Lippincott Williams & Wilkins.

Giancoli, D.C. (2005). *Physics - Principles with Applications*. (6th Edition). Prentice Hall, USA.

- Greene, D & Williams, P. (1997) *Linear accelerators for radiation therapy* Institute of Physics Publishing
- Hass, M.L., Hogle, W.P., Moore-Higgs, G.J. & Gosselin-Acomb, T.K. (2007). *Radiation Therapy: A guide to patient care*. Mosby Elsevier, St Louis.
- Hendee, W. & Ritenour R. (2002). *Medical imaging physics*. New York ; Chichester : Wiley-Liss,
- International Commission on Radiation Units and Measurements: (1993) Prescribing, Recording, and Reporting Photon Beam Therapy. (*ICRU Report 50*)
- International Commission on Radiation Units and Measurements: (1999) Prescribing, Recording, and Reporting Photon Beam Therapy. Supplement to ICRU 50 (*ICRU Report 62*).
- Khan, F. (2003). *The Physics of Radiation Therapy*. (3rd Edition). Williams and Wilkins, Baltimore.
- Moller, T.B. & Reif, E. (2006). *Pocket Atlas of Sectional Anatomy, CT and MRI, Vol 1 & Vol 2*. (3rd Edition). Thieme, New York.
- Morris, S. (2001). *Radiotherapy physics and equipment*. Churchill Livingstone.
- Purdy, J A. (2001) *3-D conformal and intensity modulated radiation therapy : physics & clinical applications*. Madison, WI, U.S.A. Advanced Medical Pub.
- Stanton, R., & Stinton, D. (1992). *An Introduction to Radiation Oncology Physics*. Medical Physics Publishing.
- Washington, C.M. & Leaver, D.T. (2009). *Principles and Practice of Radiation Therapy*. (3rd Edition). Mosby, St Louis, Missouri.
- Webber, E.C., Vilensky, J.A. & Carmichael, S.W. (2009). *Netter's Concise Radiologic Anatomy*. Saunders, an imprint of Elsevier Inc.

STAGE THREE PAPERS

- MERA 301 Clinical Studies III
- MERA 302 Applied Research Methods
- MERA 303 Radiation Technology III
- MERA 304 Radiation Therapy and Oncology III

25. Clinical Studies III

| | |
|----------------------------------|--|
| Reference Number : | MERA 301 |
| Date : | February 2010 |
| Duration : | 640 hours |
| Points : | 60 |
| 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 paper the successful student will be able to: <ol style="list-style-type: none">1. demonstrate consistently the application of a range of radiation therapy techniques with minimal supervision;2. demonstrate consistent safe practice and optimal patient care;3. demonstrate consistently the ability to problem solve in the clinical setting;4. analyse the resource implications of managing an oncology department;5. demonstrate an understanding of pharmaceuticals used in oncology. |

Content

Corresponding to Learning Outcome 1

1. Description and rationale of routine radiation therapy techniques
2. Demonstrate consistently the application of routine radiation therapy techniques

Corresponding to Learning Outcome 2

1. Demonstrates safe practices and optimal patient care
2. Demonstrates quality assurance practices in the clinical setting
3. Communicates information accurately and effectively
4. 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
1. Evaluation of problem solving outcomes

Corresponding to Learning Outcome 4

1. Human resource management
2. Financial resource management
3. Time management
4. Equipment/plant/stock/management
5. Use of statistics in management

Corresponding to Learning Outcome 5

1. Chemotherapy
2. Adjuvant chemotherapy and radiation therapy
3. Analgesics
4. Other routine medications used in a radiation therapy department

Suggested Learning and Teaching Approaches :

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

- clinically based practice;
- 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 rotational assessment
- (simulation/computed tomography) = Pass/Fail
- one rotational assessment (dosimetry) = Pass/Fail
- one rotational assessment (treatment) = Pass/Fail
- one OSCE = Pass/Fail
(Objective Structured Clinical Examination)

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

OSCE Eligibility

1. Students will need to have passed MERA 302, MERA 303, MERA 304 and coursework requirements of MERA 301.
2. Students will need to receive a minimum of **TWO** mock OSCEs in each of the areas: simulation/computed tomography, and treatment, prior to the OSCE examination.
3. Students will need to gain 640 clinical hours for the semester in which they have enrolled.

Reassessment:

- A reassessment can occur for one rotational assessment in dosimetry and one rotational assessment in either simulation/CT or treatment
- One reassessment can occur for the OSCE

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.

Textbooks

- Baird, S. (1991). *A Cancer Source Book for Nurses*. (6th Edition). American Cancer Society.
- Bomford, C., & Kunkler, I. (2003). *Walter & Miller's Textbook of Radiotherapy*. (6th Edition) Churchill Livingstone.
- Dobbs, J., Barrett, A., & Ash, D. (1994). *Practical Radiotherapy Planning*. (2nd Edition). Edward Arnold, London.
- Dowd, S. (1994). *Practical Radiation Protection and Applied Radiobiology*. WB Saunders Company.
- Faithfull, S., & Wells, M. (2003). *Supportive Care in Radiotherapy*. Churchill Livingstone, UK.
- Griffiths, S., & Short, C. (1994). *Radiotherapy : Principles to Practice*. Churchill Livingstone.
- Hass, M.L., Hogle, W.P., Moore-Higgs, G.J. & Gosselin-Acomb, T.K. (2007). *Radiation Therapy: A guide to patient care*. Mosby Elsevier, St Louis.
- International Commission on Radiation Units and Measurements: (1993) Prescribing, Recording, and Reporting Photon Beam Therapy. (*ICRU Report 50*)
- International Commission on Radiation Units and Measurements: (1999) Prescribing, Recording, and Reporting Photon Beam Therapy. Supplement to ICRU 50 Report (*ICRU Report 62*).
- Khan, F.M., & Potish, R.A. (1998). *Treatment Planning in Radiation Oncology*. Williams and Wilkins. Baltimore.
- Lau, L., & Campo, J. (1985). *Radiological Diagnosis*. Holt-Saunders.
- Mould, R. (1985). *Radiotherapy Treatment Planning*. (2nd Edition). (Medical Physics Handbook 14), Adam Hilger Ltd.
- New Ethical Catalogue*. 1994.
- Osten, R., & Shahabi, S. (1990). *Cancer Manual*. (8th Edition). American Cancer Society.
- Ruben, P. (2001). *Clinical Oncology: A multidisciplinary approach for physicians and students*. (8th Edition). W.B. Saunders Company, Philadelphia, Pennsylvania.
- Washington, C.M., & Leaver, D.T. (2009). *Principles and Practice of Radiation Therapy*. (2nd Edition). Mosby, St Louis, Missouri.

26. Applied Research Methods

| | |
|----------------------------------|--|
| Reference Number : | MERA 302 |
| Date : | February 2010 |
| Duration : | 30 contact hours and 120 hours of independent learning |
| Points : | 15 |
| 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 MERA 204 Principles of Research |
| Learning Outcomes : | On completion of this paper the successful student will be able to: <ol style="list-style-type: none">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 paper 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:

- written presentation = 70% of total mark
 - description (20)
 - analysis (30)
 - structure (20)
- oral presentation = 15% of total mark
- poster presentation = 15% of total mark

Students must complete all three aspects of the assessment.

A pass will be awarded to students who have gained a mark of 50% overall.

Resources

Davidson, C. & Tolich, M. (2007). *Social Science Research in New Zealand*. Pearson, Prentice Hall, Australia.

Hall, G (Ed). (1998). *How to write a paper*. (2nd Edition). BMJ Publishing Group, London.

Jenkins, S., Price, C.J., & Straker, L. (1998). *The Researching Therapist*. Churchill Livingstone.

Peat, J. (2001). *Health Science Research. A handbook of quantitative methods*. Allen & Unwin, NSW, Australia.

Polgar, S., & Thomas, S. (2000). *Introduction to Research in the Health Sciences*. (4th Edition).

27. Radiation Technology III

| | |
|----------------------------------|---|
| Reference Number : | MERA 303 |
| Date : | February 2010 |
| Duration : | 60 contact hours and 90 hours of independent learning |
| Points : | 15 |
| 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 paper the successful student will be able to: <ol style="list-style-type: none">1. evaluate the suitability of radiation therapy equipment for different clinical situations and evaluate the skills of resource management in relation to a radiation therapy department;2. evaluate Intensity Modulated Radiation Therapy (IMRT).3. discuss the use of brachytherapy equipment in radiation therapy;4. discuss quality assurance systems in radiation therapy;5. discuss the principles of planning and treatment in specialised techniques;6. evaluate diagnostic imaging as a treatment planning tool, to include CT, MRI, SPECT and PET;7. discuss the potential future developments of radiation therapy equipment; |

Content

Corresponding to Learning Outcome 1

1. Equipment currently available
2. Clinical resource management
3. Service planning and strategic planning
4. Human resource management
5. Problem solving

Corresponding to Learning Outcome 2

1. Aim and theory of IMRT
2. Delivery of IMRT – methods and equipment required
3. Treatment planning for IMRT
4. Quality assurance methods
5. Comparison of dose distributions and outcomes with other treatment modalities

Corresponding to Learning Outcome 3

1. Applications and source placement
2. Sources
3. Loading techniques and systems
4. Safety and quality assurance

Corresponding to Learning Outcome 4

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

Corresponding to Learning Outcome 5

1. Stereotactic techniques
2. Specialist techniques, eg. IGRT, Gating
3. Protons, neutrons and other particles in radiation therapy

Corresponding to Learning Outcome 6

1. Image interpretation to include fusion and co-registration
2. Role of diagnostic imaging in treatment planning (CT, MRI, SPECT, PET)
3. Simulators with CT options
4. CT as a simulation tool

Corresponding to Learning Outcome 7

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

Suggested Learning and Teaching Approaches :

The learning outcomes of this paper 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 :

- one assignment
- (IMRT, brachytherapy, quality assurance) = 30% of total mark
- one assignment
- (imaging) = 15% of total mark
- one assignment
- (resource management) = 15% 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 40% minimum in the examination and 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

European Society for Therapeutic Radiography and Oncology (ESTRO)

<http://www.estro.org>

American Association of Physicists in Medicine (AAPM) <http://www.aapm.org/>

International Atomic Energy Agency (IAEA) <http://www.iaea.org/>

Varian Medical Systems <http://www.varian.com/>

Elekta <http://www.elekta.com/>

GE Healthcare <http://www.gehealthcare.com>

US National Cancer Institute <http://www.cancer.gov/>

Siemens Medical <http://www.medical.siemens.com>

Textbooks

Bomford, C., Kunkler, I., & Sherriff, S. (2003). *Textbook of Radiotherapy*. (6th Edition). Churchill Livingstone.

Bushong, S. (1993). *Radiologic Science for Technologists*. Physics Biology and Protection, Mosby.

Dobbs, J., Barrett, A., & Ash, D. (1994). *Practical Radiotherapy Planning*. (2nd Edition). Edward Arnold, London.

Graham, D.T., Cloke, P. & Vosper, M. (2007). *Principles of Radiological Physics*. (5th Edition). Churchill Livingstone.

Griffiths, S., & Short, C. (1994). *Radiotherapy : Principles to Practice*. Churchill Livingstone.

Khan, F. (2003). *The physics of radiation therapy*. Williams & Wilkins, Baltimore.

Morris, S. (2001). *Radiotherapy physics and equipment*. Churchill Livingstone.

Nag, S. (1994). *Textbook on High Dose Rate Brachytherapy*. Blackwell Science.

Purdy, J. (2001). *3-D Conformal and Intensity Modulated Radiation Therapy*. Advanced Medical Publishing Inc., Madison, Wi.

Stanton, R., & Stinson, D. (1996). *Applied Physics for Radiation Oncology*. (2nd Edition). Medical Physics Publishing, Wisconsin, USA.

Washington, C.M., & Leaver, D.T. (2009). *Principles and Practice of Radiation Therapy*. (3rd Edition). Mosby, St Louis, Missouri.

Webb, S. (1994). *The Physics of Three Dimensional Radiation Therapy*. Institute of Physics Publishing, Bristol.

Webb, S. (2001). *Intensity Modulated Radiation Therapy*. IOP Publishing Ltd , Bristol, UK.

28. Radiation Therapy and Oncology III

| | |
|----------------------------------|---|
| Reference Number : | MERA 304 |
| Date : | February 2010 |
| Duration : | 140 contact hours and 130 hours of independent learning |
| Points : | 27 |
| 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 paper the successful student will be able to : |

1. identify the structure and functions of the health care system in New Zealand and the role of radiation therapy within the health care system.
2. evaluate the ways in which effects of radiation therapy can be enhanced;
3. critically analyse standard radiation therapy techniques with application to variations in clinical conditions;
4. apply their knowledge of radiobiology to the clinical setting;
5. discuss the oncology of and the clinical rationale for selecting appropriate treatment for the stated 'Site List';
6. demonstrate the principles of treatment planning and dose calculation;
7. determine a personally and professionally acceptable version of the role of a radiation therapist and be able to integrate this professional role into all their other life roles;
8. consider issues relevant to future professional development and career planning;
9. determine the causes and effects of stress on the human organism and ways in which stress can be managed;
10. describe appropriate strategies for dealing with burnout in the workplace.

Content

Corresponding to Learning Outcome 1

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. Medico-legal dimensions of the role of the radiation therapist
4. Codes of ethics and the radiation therapist

Corresponding to Learning Outcome 2

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

Corresponding to Learning Outcome 3

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

Corresponding to Learning Outcome 4

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 5

- Site List:
- gastrointestinal
 - lung
 - breast
 - sarcomas
 - head and neck
 - central nervous system

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

Corresponding to Learning Outcome 6

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

Corresponding to Learning Outcome 7

1. Personal management strategies
2. Professional socialisation
3. Radiation therapists as members of a profession - roles and responsibilities
4. Problem solving within a moral/ethical and medico-legal framework

5. Moral dimensions of the role of the radiation therapist

Corresponding to Learning Outcome 8

1. Issues relevant to future professional development and career planning – CV's, letters of application, interview skills

Corresponding to Learning Outcome 9

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 10

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 paper 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) = 15% of total mark
- One assignment (professional issues) = 15% of total mark
- One dosimetry assessment (20/30 pass mark) = 30% 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 40% minimum in the examination and 50% overall.

Reassessment:

One reassessment can occur in the dosimetry assessment (viva) if the pass mark of 20/30 is not achieved.

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

- A Guide to Palliative Care in New Zealand*. (2nd Edition). Douglas Pharmaceuticals 1992
- Berglund, C. (2007). *Ethics for healthcare*. (3rd Edition). Oxford: Oxford University Press.
- Bolles, R. (2004). *What colour is your parachute?* Ten Speed Press.
- Bomford, C., Kunkler, I., & Sherriff, S. (2003). *Walter & Miller's Textbook of Radiotherap*. (6th Edition). Churchill Livingstone.
- De Vita, V., Hellman, S. & Rosenbera, S. (2005). *Cancer - Principles and Practice of Oncology*. (7th Edition). J B Lippincott Company.
- Dowd, S. (1994). *Practical Radiation Protection and Applied Radiobiology*. W B Saunders Company.
- Fry, S.T., & Johnstone, M.J. (2002). *Ethics in nursing practice: a guide to ethical decision making*. (2nd Edition). Blackwell Science.
- Hass, M.L., Hogle, W.P., Moore-Higgs, G.J. & Gosselin-Acomb, T.K. (2007). *Radiation Therapy: A guide to patient care*. Mosby Elsevier, St Louis.
- International Commission on Radiation Units and Measurements: (1993) Prescribing, Recording, and Reporting Photon Beam Therapy. (*ICRU Report 50*)
- International Commission on Radiation Units and Measurements: (1999) Prescribing, Recording, and Reporting Photon Beam Therapy. Supplement to ICRU 50 (*ICRU Report 62*).
- International Stress Management Association. (2006). *Stress and quality of working life: current perspectives in occupational health*. Greenwich, Conn.: Information Age Publishers.
- Jasper, M., Koubel, G., Rolfe, G. & Elliott, P. (2006). *Professional development, reflection and decision-making*. Oxford: Blackwell.
- Khan, F.M., & Potish, R.A. (1998). *Treatment Planning in Radiation Oncology*. Williams and Wilkins. Baltimore.
- Ministry of Health. (2001). *The New Zealand Palliative Care Strategy*. Wellington: Ministry of Health.
- Neal, A., & Hoskin, P. (2003). *Clinical Oncology: Basic Principles & Practice*. (3rd Edition). Edward Arnold, London.
- Skovholt, T.M. (2000). *The resilient practitioner: Burnout prevention and self-care strategies for counsellors, therapists, teachers and health professionals*. Pearson. Allyn & Bacon.
- Ruben, P. (2001). *Clinical Oncology: A multidisciplinary approach for physicians and students*. (8th Edition). W.B. Saunders Company, Philadelphia, Pennsylvania.
- Stanton, R., & Stinson, D. (1996). *Applied Physics for Radiation Oncology*. (2nd Edition). Medical Physics Publishing, Wisconsin, USA.
- Washington, C.M., & Leaver, D.T. (2009). *Principles and Practice of Radiation Therapy*. (3rd Edition). Mosby, St Louis, Missouri.
- Weiten, W. (2004). *Psychology: themes and variations*. (6th Edition). Brooks Cole
- Wilson, P. (1999). *Calm at work*. Penguin Putnam, NY.

APPENDIX A

EXTERNAL MODERATORS

1. Functions

- External moderators shall be responsible for providing an impartial evaluation of student assessment for degree programme papers.
- Two external moderators will be appointed from the profession to moderate written examinations (one clinical tutor and one senior clinical radiation therapist).
- One clinical tutor will be appointed to moderate clinical journals.

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 Radiation Therapy Board of Studies and Examinations Committee on the effectiveness of assessments and any conclusions drawn from them.
- To have authority to report directly to the Head of Department where there are concerns about standards of assessment and performance.
- To participate as required in any meeting of the Board of Studies and Examinations which relates to results recommended during the moderator's period of office.
- To concur with the form and content of summative assessments for the paper.
- 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 and Examinations based on the recommendations of the Head of Department.
- 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 papers.

2. Specific Responsibilities

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

APPENDIX B

DEGREE MONITOR

This person will have responsibility for the following:

- appraising the quality management systems for the programme on an ongoing basis;
- assisting the University of Otago in identifying ways to maintain and enhance the quality of the programme;
- notifying the Head of Department and the Board of Studies and Examinations of any concerns regarding the standards or integrity of the programme.

This is to be achieved by:

- Providing verbal feedback to the Head of Department.
- Providing a report on the quality of the qualification, plus the teaching and research that support the qualification, to the Head of Department.

Person Specification

A monitor should:

- Be external to the University.
- Act as a critical colleague and make constructive comment.
- Possess appropriate research and academic expertise and experience to support a sound judgement on the quality of the qualification and the systems which support it.

In appointing a monitor the following should be taken into account:

- Qualifications appropriate to the profession.
- Present and/or past position of employment, preferably a current or recent academic position.
- Breadth of experience across teaching, research and/or employment.

Appointment Process

The appointment is approved by the Radiation Therapy Board of Studies and Examinations.

Term of Monitoring

Monitors will normally be appointed for a period of three years and will not normally serve for more than six years in total.

Procedures

A copy of the Annual Self Evaluation Report will be sent to the monitor which will include:

- A copy of the External Moderator's Reports
- A copy of the Research Report
- A five-year projected research plan and objectives for the department
- A copy of staff professional development reports

Monitor's Report

Content:

The report will address the following issues:

- An outline of the monitoring process
 - areas visited
 - meetings held
 - summary of topics discussed
 - any recommendations for future action
- Progress in responding to matters specified in the self-evaluation report.
- Progress in responding to recommendations at the previous monitor's visit.
- Moderation processes and performance.
- Proposed changes to the programme.
- Areas of strength and good practice.
- Areas of concern.
- Appropriateness of infrastructure to support research.
- Physical and financial resources in the context of achieving teaching and research objectives.
- Overall quality of research in the context of international research in similar areas.

Report:

- The report will be drafted and submitted to the Head of Department for comment.
- Any discrepancies must be discussed between the Head of Department and the monitor.
- The final signed report will be submitted to the Radiation Therapy Board of Studies and Examinations through the Head of Department.

Response:

- A draft response will be prepared by the Head of Department.
- The report and draft response will be discussed at the Radiation Therapy Board of Studies and Examinations where the final response from the University will be approved.
- The Head of Department will submit the response to the report to the monitor.

APPENDIX C



**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 satisfied 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

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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.



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

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.

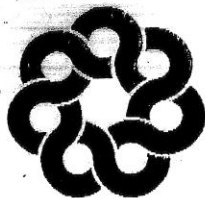
Please convey my congratulations to members of Central Institute of Technology who contributed to the success of this degree approval process.

Yours sincerely



Barry Dawe
Team Leader
Quality Assurance

APPENDIX D



New Zealand Vice-Chancellors' Committee

Postal address
P O Box 11-915, Wellington, New Zealand
Street address
11th floor, 94 Dixon Street, Wellington

Telephone 64-4-381 8500
Facsimile 64-4-381 8501
Website www.nzvcc.ac.nz

COMMITTEE ON UNIVERSITY ACADEMIC PROGRAMMES

Minutes of a meeting held on Thursday/Friday,
19/20 July 2001, from 9.30 am, Thursday, in the NZVCC offices

| | | |
|-----------------------|------------------------------|-----------------------------------|
| PRESENT: | Professor G S Fraser | NZVCC (Chair) |
| | Professor D M Ryan | The University of Auckland |
| | Dr D W Brook | Auckland University of Technology |
| | Associate Professor K Turner | The University of Waikato |
| | Professor K S Milne | Massey University |
| | Ms P Fenwick | Victoria University of Wellington |
| | Dr J E Cameron | University of Canterbury |
| | Professor R J Field | Lincoln University |
| | Dr P H Meade | University of Otago |
| | Mr J W Scott | APNZ |
| | Mr D Scott | ACENZ |
| | Mr S Huggard | NZUSA |
| In attendance: | Mr L S Taiaroa | NZVCC (part of the time) |
| | Mrs A M Werren | NZVCC |
| | Dr A West | NZQA) for |
| | Ms K Colbert | NZQA) Item 11 |

| | | | | | | |
|---------------------------------|--|------------|-------------------------|----------|-------------|-------------------------------------|
| 12 | Bachelor of Commerce and Administration / Bachelor of Arts | VUW/00 | BCA/9 BA/45 | na | na | Approved |
| UNIVERSITY OF CANTERBURY | | | | | | |
| | Qualification | Univ. code | Proposal identification | Length* | PG Funding* | Resolved |
| 1 | Bachelor of Arts | UC/01 | BA/1 | na | na | Approved |
| 2 | Bachelor of Education | UC/01 | BEd/1 | na | na | Approved |
| 3 | Bachelor of Education | UC/01 | BEd/2 | na | na | Approved |
| LINCOLN UNIVERSITY | | | | | | |
| | Qualification | Univ. code | Proposal identification | Length* | PG Funding* | Resolved |
| 1 | Graduate Diploma in Leisure Events Management | LU/01 | GDipLEM/1 | 1 | na | Approved |
| 2 | Bachelor of Tourism Management | LU/01 | BTourMgt/1 | 3 | na | Approved |
| 3 | Diploma in Conservation and Ecotourism Management | LU/01 | DipCEM/1 | 2 | na | Approved |
| 4 | Graduate Certificate in Maori Planning | LU/01 | GCertMP/1 | 0.5 | na | Approved |
| 5 | Graduate Diploma in Maori Planning | LU/01 | GDipMP/1 | 1 | na | Approved |
| 6 | Certificate in Maori Studies | LU/01 | CertMS/1 | 1 | na | Approved |
| 7 | Postgraduate Certificate in Indigenous Planning | LU/01 | PGCertIP/1 | 0.5 | na | Approved |
| 8 | Postgraduate Diploma in Indigenous Planning | LU/01 | PGDipIP/1 | 1 | na | Approved |
| 9 | Master of Maori and Indigenous Planning and Development | LU/01 | MIPD/1 | 2 | PG | Approved |
| UNIVERSITY OF OTAGO | | | | | | |
| | Qualification | Univ. code | Proposal identification | Length* | PG Funding* | Resolved |
| 1 | Foundation Studies Certificate | UO-01 | FoundStudCert-1 | na | na | Approved |
| 2 | Bachelor of Health Sciences | UO-01 | BHealSc-1 | 3 | na | Approved |
| 3 | Bachelor of Health Sciences | UO-01 | BHealSc-3 (Revised) | 3 | na | Approved backdated to 01.07.0 |
| 4 | Bachelor of Medical Sciences | UO-01 | BMedSc-1 | (Hons) 1 | PG | Approved |
| 5 | Postgraduate Diploma in Clinical Dentistry | UO-01 | PGDipClinDent-1 | 1 | PG | Approved |
| 6 | Master of Dental Surgery | UO-01 | MDS-1 | 2 | PG | Approved |
| 7 | Postgraduate Diploma in Health Sciences | UO-01 | PGDipHealSc-1 | 1 | PG | Approved |
| 8 | Postgraduate Certificate in Health Sciences | UO-01 | PGCertHealSc-1 | 0.5 | PG | Approved |
| 9 | Postgraduate Certificate in Health Sciences | UO-01 | PGCertHealSc-2 | 0.5 | PG | Approved |
| 10 | Postgraduate Certificate in Aeromedical Evacuation | UO-01 | PGCertAerEv | 0.5 | PG | Approved |
| 11 | Master of Primary Health Care | UO-01 | MPHC-1 | 2 | PG | Approved |
| 12 | Postgraduate Certificate in Primary Health Care | UO-01 | PGCertPHC-1 | 0.5 | PG | Approved |