

**ROYAL COLLEGE OF SURGEONS
IN IRELAND**



**REGULATIONS RELATING TO THE
TRAINING, EDUCATION AND EXAMINATION
OF CANDIDATES FOR**

**DIPLOMA OF FELLOW IN
THE FACULTY OF RADIOLOGISTS -
RADIODIAGNOSIS AND
RADIATION ONCOLOGY
F.F.R.R.C.S. (Ireland)**

Please see our website: www.radiology@rcsi.ie

Revised June 2009

1. The Diploma of Fellow in the Faculty of Radiologists may be granted to those who possess a qualification registerable in the Irish or British Medical Registers and to graduates of Universities and Medical Colleges overseas whose degrees are not registerable in the Irish or British Registers, under such conditions as may be determined by the Council of the College, on the advice of the Faculty, in each individual case.

Applications in such special cases must be addressed to the Registrar of the College (see Para. 2) and must be accompanied by certificates showing the date of qualification and particulars of relevant postgraduate experience.

2. Candidates for the Fellowship are required to pass two examinations, namely the Primary Examination and the Final Examination.
3. All enquiries and communications with reference to the examination for the Fellowship must be addressed to the Examinations Officer, Royal College of Surgeons, St. Stephen's Green, Dublin 2.
4. Applications for admission to the examination must reach the Examinations Officer before the date fixed for receiving applications for the examination.
5. Application for admission to the examination must be accompanied by the required certificates and the full amount of the fee payable for the examination.
6. The dates of the examination are published and may be obtained from the Examinations Officer. If insufficient candidates present for an examination the Faculty reserves the right to cancel the examination with due notice.

Details of the examinations are to be made available on the RCSI website, www.rcsi.ie, exam applications may be made using this website.

7. A candidate withdrawing an application for admission to the examination in writing, may receive back the full amount of the fee paid (less 10% deducted for administrative purposes), provided such withdrawal is received before the last date on which applications are due. A candidate failing to appear for an examination for which his entry has been accepted forfeits his fee.
8. A candidate who desires to make representations with regard to the conduct of his examination shall address them to the Examinations Officer, Examination Office, RCSI and not in any circumstances to an examiner.
9. The Faculty may refuse to admit to an examination or to proceed with the examination candidates who infringe any of the regulations or who are considered by the examiners to be guilty of behaviour prejudicial to the proper management and conduct of the examination.
10. The Fellowship Advisory Board of the Faculty shall be empowered to require evidence of satisfactory training ie. attendance at lectures and evidence of practical experience eg. log books, certification of head of department etc. before acceptance for admission to the examination.

11. Candidates on the Irish Training Programme are expected to sit the Faculty Examinations.

PRIMARY EXAMINATION IN RADIO DIAGNOSIS

12. The examination will be held in May and September unless otherwise ordered. A candidate may only attempt on four occasions the Primary Fellowship Examination of the Faculty of Radiologists of the Royal College of Surgeons in Ireland or equivalent examination with reciprocal recognition. In certain instances the Faculty reserves the right to refer a candidate for one year.
13. This examination may not be taken until two years after full registration (three years after graduation, e.g. MB.). Candidates should have at least one year's clinical experience after full registration and one academic year of clinical experience in Radiodiagnosis in a recognised centre, but other experience may be approved subject to individual consideration by the Faculty.
14. The Examination shall consist of:
 - (a) Multiple Choice Paper
 - (b) Digital Image Examination with Multiple Choice Paper
 - (c) Viva Voce.
15. The subjects of the Examination are:

Physical Basis of Medical Imaging

A basic knowledge is assumed.

Introduction to Atomic and nuclear Physics, the production and properties of X-rays, and nuclear radiations.

X-ray tubes, general radiographic systems, and systems for special application.

Interaction of X and gamma rays with matter, and the importance of interactions in producing subject contrast. Measures to optimise subject contrast.

The photochemical process, film screen combinations and optimization of radiographic contrast.

Image intensifier/TV systems for fluoroscopy and their application in special systems for digital fluoroscopy, DSA and other special applications.

Production of properties of radionuclides and their incorporation into radiopharmaceuticals.

Nuclear Imaging systems, the gamma camera and special nuclear imaging devices, the basics of PET imaging.

Treatment of images as digital arrays and basic image processing techniques.

Biological effects of radiation at the cellular and epidemiological levels, the ICRP system of dose limitation. European and National Regulations.

Biophysics and technology of ultrasound imaging.

Biophysics and technology of computer tomography.

Biophysics and technology of magnetic resonance imaging.

Hard copying devices for modern medical Imaging Systems

Quality assurance procedures and systems for all of the above.
Principles of digital imaging.
Physical aspects.
The photographic process, characteristics of X-ray film, xeroradiography
Variation in X-ray exposure factors.
Definition and image quality.

Radiological Anatomy:

The normal anatomy of areas demonstrable by imaging and the techniques required to display them.

General Radiography:

Standard projections.
Soft tissue radiography and mammography, micro and macro-radiography.
Localisation techniques and tomography.

Special investigations, contrast media and pharmacological aids:

Familiarity with day-to-day examinations and outline knowledge of the requisites of less common investigations.
Uses and relative advantages of contrast media and pharmacological aids and contra-indications .
Treatment of reactions and resuscitation methods.

FINAL EXAMINATION OF RADIODIAGNOSIS

16. Candidates must have experience of all modern imaging techniques.
17. The examination is held in the months of April and November unless otherwise ordered.
18. Candidates who have passed the Primary Examination or who have been exempted will be permitted to sit the Final Examination after not less than three years certified training in a radiological post, recognised by the Faculty for this purpose.
19. Candidates should have achieved satisfactory trainee assessments for at least 3 completed years of training.

This examination will be in clinical radiology, to include radiodiagnosis, medicine, surgery and pathology. It will consist of some or all of the following:

- (a) MCQ in Clinical Radiology (300 items – 60 stems)
- (b) Essay paper in Clinical Radiology.
- (c) Viva Voce in Clinical Radiology.
- (d) Film reporting session.
- (e) Rapid reporting session.

Candidates presenting for the Final Examination for the first time will be allowed only six attempts at the examination, subject to the following conditions:

1. All six attempts at the examination must be made within **eight years** of the date of commencing training in radiology in an approved training scheme; any extension beyond eight years would only be considered in exceptional circumstances where ill-health has forced the candidate to interrupt their training for a considerable period of time

2. After a candidate has failed the exam three times, approval to make a **fourth attempt** at the exam will depend on review of their training performance and previous exam performances by the Training Co-ordinator and the Fellowship Advisory Board; a satisfactory review will be required before such an application will be accepted
3. A candidate wishing to make any **attempts beyond four** must apply in writing to the Education Committee of the Faculty for permission to do so
4. This application must be supported by a letter from the head of the department in which the candidate is working at the time of the application confirming the candidate's suitability for a further attempt at the exam
5. The Education Committee will then seek a recommendation from the Part 2 examiners regarding the candidate's suitability for a further attempt; this recommendation will be based on the performances by the candidate in previous attempts, and may include appropriate comments arising from these previous attempts
6. The Education Committee will then make a recommendation, to be ratified by the Board of the Faculty, as to whether the candidate should be allowed attempt the exam at the sitting applied for. The candidate can only apply to the examinations office to sit the exam after receiving written permission to do so from the Faculty Board.

GUIDANCE NOTES FOR THE FINAL FELLOWSHIP EXAMINATION (RADIODIAGNOSIS):

Ultrasound, Computed Tomography, Nuclear Medicine and Magnetic Resonance Imaging:

Candidates will be expected to demonstrate that they have gained practical experience in basic imaging and interventional techniques including the value and limitations of imaging modalities in addressing various clinical problems.

They are expected to be familiar with current radiological practice in the use of ultrasound CT, Nuclear Medicine and Magnetic Imaging, together with general radiology.

PRIMARY FFRRCSI EXAMINATION IN RADIATION ONCOLOGY

- 19 The Examination will be held in March and September unless otherwise ordered.
- 20 The examination may not be taken until three years after full registration (Four years after graduation e.g. MB. BCh).
Graduates require two years clinical experience after full registration, and a full academic year approved training in an accredited post in Radiation Oncology

The **Primary Examination** comprises the following 4 subjects orientated towards their clinical applications in clinical oncology.

- (1) *Physics*: The application of physical principles and methods in clinical Radiotherapy, physical basis of the therapeutic uses of radioactive isotopes, radiation hazards and protection.

- (2) *Medical statistics*: with special reference to clinical trials, assessment of results, and the epidemiology of cancer.
- (3) *Cancer Biology and Radiobiology*: The processes of cancer cell transformation and tumour development, & how these processes can be demonstrated, and the response to ionising radiation of cells both individually and grouped as tissues.
- (4) *Clinical Pharmacology*: The structure, action, use and evaluation of drugs used in the treatment of a patient with cancer.

Candidates are permitted to sit the Primary FFRCSI examination upon completion of Faculty approved lectures in the above courses. It is obligatory to hold a training post in an approved Department of Radiotherapy to take the Primary examination.

The Primary Examination consists of two modules (a) and (b):

- (a) Physics
Medical Statistics and Epidemiology
- (b) Cancer Biology / Radiobiology
Pharmacology

The Examiners will be:

- (a) Clinical Oncologists, Medical Physicists and Medical Statisticians
- (b) Clinical Oncologists, Clinical Pharmacologists, and Cancer Biologists

Each Module is held in March and September and consists of :

- (a) For each subject there is a single paper of single best answer questions

Candidates may enter the examination at any **four** consecutive attempts. Unsuccessful attempts at the First FRCR examination of the Royal College of Radiologists will be counted in the total four sittings.

Unsuccessful candidates will retain credit for any module passed.

The Faculty of Radiologists of the Royal College of Surgeons in Ireland reserves the right to refer for twelve months any candidate who fails all parts of the Primary Fellowship of the Faculty of Radiologists.

A Candidate who has been referred by the Royal College of Radiologists in London, having failed the First FRCR examination of the college, will not be permitted to sit the Primary examination of the Faculty of Radiologists, RCSI during the period of referral

Physics:

The emphasis is placed on candidates acquiring a broad knowledge of physics relevant to the clinical practice of radiotherapy. It is essential that during the course of instruction there should be demonstrations of therapeutic and related equipment and procedures to illustrate the importance of the subject to radiotherapeutic practice.

Medical Statistics:

Candidates will be expected to have sufficient knowledge of the principles of the subject to enable them to study critically the statistical validity of published investigations, Particular emphasis is placed on candidates acquiring sufficient knowledge of the subject to enable them to appreciate the requirements needed to design, monitor and assess trials and epidemiological studies.

Cancer Biology and Radiobiology:

- (1) Cancer Biology: The understanding of carcinogenesis, cellular and molecular features of malignancy including biochemical control, signalling and cell death, tumour development, growth kinetics, micro-environmental changes, metastases and immune responses, and common laboratory techniques to demonstrate these features
- (2) Radiobiology: A knowledge of the cellular and molecular basis for the response of cells, tissues and tumours to ionising radiation is expected. Candidates are expected to understand the chemical interactions between radiation and cells and to understand the development of malignancy and the principles and developments underpinning the therapeutic applications of radiation. A knowledge of current models of radiation response is expected.

Clinical Pharmacology:

The emphasis is on cytotoxic drugs, hormones and biological therapies used in clinical practice, their modes of action and side effects. The syllabus also includes the basic principles of pharmacokinetics and pharmacodynamics, clinical trials and the basic pharmacology of drugs used in the supportive care of patients with cancer.

For further details refer to Royal College of Radiologists website www.rcr.ac.uk

Final FFRRCSI Examination in Radiation Oncology

21. The final examination is held in the months of May and November unless otherwise indicated.
22. It is obligatory to hold a training post in an approved Department of Radiotherapy to take the Final examination
23. Candidates are permitted to sit the Final Examination on completion of three full years preparation in a specialist radiation oncology training post in Ireland or the U.K., having passed both modules of the Primary examination
24. The examination shall consist of:
 - (a) Two written papers in radiotherapy and oncology
 - (b) A clinical examination in radiotherapy and oncology, which may include a practical test of radiation planning ability or clinical stations.
 - (c) An oral examination in radiotherapy and oncology.
 - (d) Questions in medicine, surgery and pathology may be asked and will generally be orientated towards the diseases, and problems which the Radiation Oncologist may have to deal with during the course of their work
25. Fees (see attached leaflet) should be by cheque, money order or bank draft, payable to the Royal College of Surgeons in Ireland.
26. The Faculty of Radiologists of the Royal College of Surgeons in Ireland reserves the right to refer for twelve months any candidate who fails all parts of the Final Fellowship of the Faculty of Radiologists.
27. Unsuccessful candidates will be required to re-sit the whole of the Final FFRRCSI Examinations. Any candidate who does not attempt all components of the Final FFRRCSI Examination will be deemed to have failed the examination overall.
28. Candidates are allowed only four attempts at the Final Examination of this College. Unsuccessful attempts at the Final FFRRCSI examination of the Royal College of Radiologists (London) will be counted in the total four.
29. A candidate failing on four occasions can be referred to the Fellowship Advisory Board of the Faculty of Radiologists RCSI for exemption