



Faculty of Radiologists Specialist Training Programme in Radiation Oncology Curriculum 2021

Radiation Oncology Training Curriculum

Faculty of Radiologists, RCSI

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Introduction	5
Purpose of the Curriculum	6
Objectives / Intended Learning Outcomes / Competencies	7
Curriculum Organisation.....	9
Educational Experience.....	10
Learning and Teaching Methods	10
Work Based Experiential Learning.....	10
Formal Teaching	12
Independent Self-directed Learning.....	12
Learning with peers	12
Assessment procedures	13
Summative Assessment	13
Formative Assessment	14
Documentation of Training and Assessments	15
Resources and Support Structures	16
Infrastructure.....	16
Training Faculty.....	17
Curriculum evaluation.....	20
Evaluation of the Supervisor and Trainer Effectiveness	20
Evaluation of Trainee Progress.....	21
Outcome Evaluation	21
Training Regulations.....	21
Application and Admission	21
Length of training / Flexible (Part-Time) Training	22
Certificate of Satisfactory Completion of Specialist Training (CSCST).....	23
Resignation	23
List of Appendices	24
Appendix 1: Curriculum Matrix	24
Appendix 2: Curriculum Map.....	24



Appendix 3: Underpinning Scientific Knowledge / First Part Exam Syllabus	24
Appendix 4: Radiation Oncology/ Final Exam Syllabus.....	24
Appendix 5: Progression Criteria	24
Appendix 6: Trainee Journey Map	24
Appendix 7: Needs Assessment.....	24
Appendix 8: Duties and Responsibilities of SpRs.....	24
References	25



Introduction

Radiation Oncology is defined as the specialty of the branch of clinical medicine that uses Ionizing Radiation, either alone, or in combination with other modalities, for the treatment of patients with malignant or other diseases.

Radiation Oncology can be practiced as an independent oncological specialty or may be integrated into the broader medical practice of oncology. Radiation Oncology includes responsibility for the diagnosis, treatment, follow-up, support and care of the cancer patient as an integral part of the multidisciplinary management of patients.

The Faculty of Radiologists of the Royal College of Surgeons in Ireland is the sole body responsible for training of radiation oncologists and certifying their competence for registration and hereby reaffirms that right.

It is the basic tenet of the training programme that the patient's interest supersedes all other considerations, particularly self-interest, and that at all times the SpR acts with a high degree of professionalism, integrity and an ethical principle of patient care. Effective communication skills are crucial in this process, as well as an ability to act as part of a clinical care team.

There are wide variations in the definition of the curriculum. The curriculum is a document containing the information that the trainee and the trainer should know about the training programme. It should define the process of training and its regulations, as well as teaching, learning and assessment; is a full guide for the trainee and trainer regarding quality assurance; and it should be dynamic and frequently updated, particularly in a specialty like radiation oncology, as new techniques frequently develop. In this revised version of the curriculum, we included new technologies developed since the last version.

There are different approaches or methods to designing a curriculum. Grant proposed a six-step method in curriculum development (1). These six steps include: needs assessment, curriculum purpose, learning outcomes, curriculum organisation, educational experience and curriculum evaluation. This method has been adopted in developing the current version of this curriculum. The first step, which is needs assessment and analysis, is included in Appendix 7



Purpose of the Curriculum

The Faculty of Radiologists RCSI is the sole body responsible for the training of specialists in radiation oncology in Ireland and sets the standards in radiation oncology leading to the award of the Fellowship of the Faculty of Radiologists RCSI (FFRRC SI) and the subsequent validation of 5 years of specialist training, recognised by the Medical Council of Ireland for entry onto the Specialist Register.

The training programme in radiation oncology has the aim of imparting knowledge and experience in all aspects of the non surgical treatment of cancer, with a special focus on radiation oncology. It is a monitored programme, leading to CSCST (Certificate of Satisfactory Completion of Specialist Training) and ultimately entry on the specialist register of the Medical Council of Ireland, indicating competence to practice as a Consultant Radiation Oncologist.



Objectives / Intended Learning Outcomes / Competencies

The objective of the radiation oncology training programme is to educate and train physicians in the medical specialty of radiation oncology to the level of competency allowing them to practice as an independent specialist.

The definition of intended learning outcomes, objectives and competencies are overlapping, but sometimes used to indicate the same things. Competencies are mainly linked with the ability to perform a task or gain a skill. The intended learning outcome is broader and includes knowledge, skills and attitudes. Objectives are usually mentioned when considering behaviours. Competence based medical education uses clearly defined learning outcomes, describing the desired abilities of graduates, formulated as competencies. These competencies are often generic, that is, not specialty-specific and thus detached from clinical practice. Entrustable Professional Activities (EPAs) define learning outcomes as relevant profession-specific activities, requiring the desired competencies of the physician. Therefore, EPAs link competencies to medical practice. In this version of the curriculum, intended learning outcome will be used, as it is a broader term.

There is a wide variation in the number of intended learning outcomes in different training curricula internationally. For example, the Royal College of Radiologists training curriculum defined it as Capabilities in Practice (CiP) and divided it into general CiPs and oncology CiPs(2). The European Society of Therapeutic Radiation Oncology (ESTRO) core curriculum has the learning outcomes or EPAs as 14 main EPAs, with a number of subheadings below each one. Both the main headings and subheadings could be considered as intended learning outcomes(3).

We developed the training programme's intended learning outcomes based on the ESTRO recommendations, which fulfil the Medical Council Eight Domains of Good Professional Practice.

By the end of the training programme, the trainee should be able to:

- Communicate appropriately and effectively with patients and their relatives
- Work effectively with other health care professionals to provide safe care and optimise quality of treatment



- Discuss the context in which they work and apply the principles of change management, including quality improvement methodology in this context
- Use resources appropriately
- Demonstrate the ability to work in, build and lead teams
- Plan personal learning experiences and use them to enhance patient care
- Educate others to enhance patient care
- Contribute to the knowledge base that underpins patient care
- Demonstrate that the care of their patients is their first concern
- Manage their work life balance to maintain their own wellbeing
- Be advocates for cancer patients
- For each site-specific cancer, the trainee should be able to:
 - Develop a management plan for patients with a cancer diagnosis
 - Implement a treatment strategy
 - Develop and implement a management plan for survivorship

The curriculum map (Appendix 2) outlines in detail the intended learning outcomes of the current training programme and demonstrates its link with the Medical council domains of professionalism, as well as the ESTRO domains.



Curriculum Organisation

In the current design of the curriculum, different models overlap, but it will primarily follow the modular design, as the trainee will rotate every 4-6 months, with different trainers who are experts in site specific areas, such as head and neck, or gastrointestinal tumours. Each site could be considered a stand-alone component. The spiral model also overlaps, as there are some basic radiotherapy techniques easily learned in the first few months, with the trainee building more experience during the rotation and learning more advanced radiotherapy techniques as they advance in their training.

The training programme is divided into three main stages:

Stage 1 Initial Phase - Years 1 and 2 (Part 1 Exam Phase): The trainees are expected to develop high competencies in basic areas, for instance: palliative radiotherapy and some sites such as breast and prostate. They develop some competencies in other sites, gain the underpinning scientific knowledge in Appendix 3 and pass the Part 1 exam.

Stage 2 Intermediate Phase - Years 3 and 4: The trainees are expected to develop high competencies in all major tumour sites and basic radiotherapy techniques. They are also expected to gain some exposure/competencies in rare tumours and advanced radiotherapy techniques. During this phase, the trainee is expected to pass the final exam.

Stage 3 Advanced Phase - Year 5 (Post-Final Exam): The trainees are expected to gain more experience in specific areas of interest, develop competencies in advanced radiotherapy techniques and assume additional leadership roles.



Educational Experience

The training programme must provide the trainee with in-depth knowledge in the basic and clinical sciences in the field of radiation oncology and must train the trainee to be proficient in the clinical practice of radiation oncology.

Training institutions must schedule regular teaching activities like teaching rounds, case presentations and scheduled lectures. These teaching activities must include trainee participation that increases with experience.

Training institutions should facilitate access to teaching courses on a national or international level if needed.

Trainees should actively participate in tumour-boards, journal clubs and research conferences.

Trainees should be encouraged to engage in a research project or quality improvement project under the supervision of experienced staff (experimental research, clinical research or trainers with expertise in quality improvement).

Training institutions must allow the trainees sufficient protected time during their working hours for study of the literature, preparation of case presentation, etc.

Learning and Teaching Methods

Work based experiential learning will be the main method of learning in the radiation oncology postgraduate training program. Other methods, including independent self-directed learning and learning with peers will also be encouraged, in addition to the formal postgraduate teaching lectures.

Work Based Experiential Learning

The content of work based experiential learning includes active participation in the following activities:

- Outpatient clinics under consultant supervision, allowing clinical findings and management plans to be presented to and discussed with the training consultant. The



degree of responsibility taken by the trainee will increase as his/her competency increases.

- Radiotherapy planning: The trainee must gain experience in radiotherapy planning that is appropriate to the stage of training, including virtual simulation, 3-dimensional (3-D) conformal planning, image fusion and intensity-modulated radiotherapy (IMRT), Volumetric Modulated ARC Therapy (VMAT) and image-guided radiation therapy (IGRT). There must be opportunities to discuss treatment plans with the supervising consultant.
- Radiotherapy on treatment review clinics: Trainees must gain experience in the acute and long-term complications of radiotherapy.
- Theatre sessions to allow trainees to gain experience of brachytherapy.
- Radioisotope treatment sessions to allow the trainee to gain experience of the therapeutic use of unsealed radioactive isotopes.
- Consultant-led ward rounds. Trainees must have the opportunity to observe senior doctors assessing and communicating with patients and their relatives. Feedback should be given on the trainee's clinical and decision-making skills.
- Personal ward rounds and provision of ongoing clinical care for oncology inpatients.
- On-call experience that allows the trainee to develop competencies in the diagnosis and management of oncology emergencies. Trainees must gain experience of out-of-hours emergencies by participating in an on-call rota during at least part of their training. When on-call they must be supervised by a named consultant.
- MDT meetings where patients are discussed with doctors from other disciplines. These provide excellent opportunities for observation of clinical reasoning.

The degree of responsibility taken by the trainee will increase as his or her competency increases. There should be appropriate levels of clinical supervision throughout training, with increasing clinical independence and responsibility as learning outcomes are achieved.

The timetable should contain an appropriate mix of outpatient clinics (new and follow-up), radiotherapy treatment sessions, MDT meetings, ward rounds and other appropriate clinical activities.

Trainees will gain experience in leadership and management by participating in local committees and taking on leadership roles as they progress through training.



There will be opportunities for trainees to develop their teaching skills through teaching of junior colleagues, as well as through formal lecture series for SHO and medical students.

Formal Teaching

A structured teaching course for the Part 1 and Part 2 examinations is organised by the faculty (September to May each year). The lecture schedule is usually available by the end of August in the MedHub trainee portal.

There are also many opportunities throughout the year for formal teaching in local postgraduate teaching courses and at national and international meetings.

Independent Self-directed Learning

Trainees will use independent self-directed learning in a variety of ways, depending upon their stage of learning. Suggested activities: reading, including journals and web-based material; maintenance of a personal portfolio; reflective learning; audit; quality improvement; and research projects.

Learning with peers

There are many opportunities for trainees to learn with their peers. As trainees progress in the training programme, their duties expand to include supervision and teaching of junior trainees. Local postgraduate teaching opportunities allow trainees with varied levels of experience to come together for small group sessions.



Assessment procedures

Summative Assessment

The purposes of the summative assessment are mainly to provide evidence that trainees are meeting the curriculum standards; and ensure that trainees possess the essential underlying knowledge and skills required to protect patient safety, by providing a baseline quality standard.

Annual Assessment

The Faculty of Radiologists conducts the annual assessment in June. The portfolio of the trainee is reviewed and competencies and experience gained in the previous training year are evaluated. Based on the progression criteria a decision is made regarding the eligibility of the trainee to progress to the next training year and the previous period of training is approved. More details are available in Appendix 5 (Progression Criteria).

Fellowship of Fellow of the Faculty of Radiologists, Radiation Oncology FFRRCSI

Acquisition of knowledge is formally tested by examination. SpRs will be formally examined as follows:

The Primary Examination for the FFRRCSI in Radiation Oncology

After attending the required lecture program in the first year, trainees are expected to sit the primary FFRRCSI (First part FRCR). The examination for the Primary FFRRCSI in radiation oncology is set and convened by the Royal College of Radiologists (RCR) but sat in Ireland. (The First FRCR examination is recognised by the Faculty of Radiologists RCSI). The syllabus, examination regulations and structure are available on the website of the royal college of radiologists, UK <http://www.rcr.ac.uk>. Failure to obtain the Primary FFRRCSI (First FRCR) after four attempts, will lead to the SpR leaving the training programme.



The Final Examination for the FFRRCSI

After attending the lecture programme for the final examination, trainees are expected to sit the Final FFRRCSI.

Details of the examination regulations are available in the examination section of the faculty webpage: <https://radiology.ie/training/examinations1>. Trainees will not be allowed to progress to the final year of the training without passing this exam.

Formative Assessment

The main purposes of formative assessment are: to enhance learning by providing trainees with immediate feedback; measure their performance; and identify areas for development. Formative assessment will also drive learning and enhance the training process by making it clear what is required of trainees and motivating them, to ensure they receive suitable training and experience.

The formative assessment will include local assessments conducted by the local training coordinators and work-based assessments which may include;

- Direct observation of radiotherapy planning
- Communication with patients (e.g. mini-CEX)
- Decision-making when managing patients and recording patient encounters (CBDs)
- Participation in MDTs
- Evaluation by colleagues, which may include peers, trainers, nurses, RTTs, administrators (360 degree appraisal)
- Evaluation by patients
- Presentations
- Journal clubs
- Quality improvement/audit projects
- Personal research



- Direct observation of teaching delivered by the trainee

Workplace-based assessments should use validated tools where these are available. The trainee is primarily responsible for organising workplace-based assessments and archiving trainers' reports and the results of workplace-based assessments in their portfolio.

Documentation of Training and Assessments

The trainee should maintain a learning portfolio/logbook, either in hard copy or using MedHub, which is available through the faculty website. This portfolio will be used to monitor the progress during the annual assessment.

The following items are suggested to be included in the portfolio and to consider updating it on at least a yearly basis before the annual assessment:

- Training Rota
- Updated CV
- Timetable including educational sessions
- Personal development Plan
- Results of workplace based assessments
- Log book of experiences/ cases managed by the trainee
- Records of meetings with the trainers
- Results of summative assessments if any
- Submitted papers, articles, abstracts, posters where the trainee is one of the authors
- Presentations by the trainee
- Educational sessions run by the trainee
- Meetings attended including educational meetings or courses, conferences and scientific meetings
- Leadership activities including membership of committees in the organisation, rota coordination, quality improvement projects, change management and membership of guideline development committees



- Reflections on personal reading
- Reflections on significant incidents and complaints detailing the learning gained

SpRs will undergo annual assessments, undertaken by their trainers and the national training coordinator and recorded in a report. This report and the portfolio will provide a detailed record of the knowledge and experience gained during each year of training.

Resources and Support Structures

Infrastructure

Training sites should be adequately equipped to support both the workload and range of radiation oncology/radiation services required for training, including new technologies and novel techniques.

According to the European society of radiation oncology (ESTRO) guidelines, there should be:

- Mega voltage machines available, at least one with high-energy electrons, equipped with IGRT and able to deliver IMRT
- Access to a dedicated CT-scanner
- Computerised treatment planning and technical support. This should include appropriate dosimetry
- Radiotherapy protection equipment
- Appropriate patient treatment aids
- The opportunity to become at least familiar with brachytherapy and stereotactic RT
- Beds for inpatients or at least sufficient access to them in other department
- Facilities for systemic therapies
- Facilities for supportive and palliative care
- Quality control programmes for patient care, treatment decisions, follow-up and outcome in a range of cancer sites,
- Access to regular Multidisciplinary Tumour Boards (MDTs)



An adequate case mix for each trainee should be ensured by continuous monitoring by means of a logbook.

The Radiation Oncology Postgraduate Higher Specialist Training Programme in Ireland is a national programme with three training sites:

1. Cork University Hospital
2. Galway University Hospital
3. St Luke's Radiation Oncology Network (SLRON) in Dublin, which consists of three centres:
 - a. St Luke's Hospital Rathgar
 - b. St Luke's Radiation Oncology Centre at St James's Hospital
 - c. St Luke's Radiation Oncology Centre in Beaumont Hospital.

Each Radiation Oncology trainee will rotate through the three training sites during their five-year programme as required. The rotation of the trainees is organised by collaboration of the three sites to make sure trainees have adequate exposure to all required areas of radiation oncology.

Training Faculty

Those involved with the delivery of the training programme include the following:

National Training Coordinator (NTC)

The key roles of the Radiation Oncology NTC are:

1. To supervise, organize and coordinate the delivery of the existing training programme lecture schedule and modules, in collaboration with the primary and final FFRCSI examination education and lecture coordinators.
2. To coordinate the annual shortlisting and interview processes for the Higher Specialist Training Programmes in conjunction with the faculty Dean and officers.
3. To attend the scheduled radiation oncology committee meetings, shortlisting, interview and assessment days, the 'Train the Trainer' and 'Doctor in Difficulty'



meetings and to meet and liaise with the Dean and others, as required for efficient management of affairs.

4. To liaise with the Dean, the FAC Chair, and education coordinators regarding SpRs in difficulty within the programme.

The NTC reports to the Dean and faculty Board, and the education and fellowship advisory committees.

Local Hospital Training Coordinators (HTC)

There are three local training coordinators in radiation oncology, one in each of the three accredited training sites.

The roles of the Hospital Training Coordinator include:

- To have overall educational and supervisory responsibility for the trainee in a given placement.
- To ensure that an induction to the unit has been carried out.
- To ensure that the trainee is familiar with the curriculum and assessment system relevant to the level or stage of training and undertakes it according to requirements.
- To ensure that the trainee has appropriate day-to-day supervision appropriate to their stage of training.
- To act as a mentor to the trainee and help with both professional and personal development.
- To ensure that each trainee has a nominated consultant trainer for each placement. If the trainee's rotation is working with a single consultant, then that consultant will be the trainee's consultant trainer for that placement period. If the trainee will be working for several consultants during a rotation, it is beneficial for the trainee to have one individual consultant as their consultant trainer. This is frequently the consultant who they spend the most time with, or who is training them in a particular skill that they may not have exposure to again during their five years of training. All consultant trainers will have agreed in advance to be involved with trainee education.



- To ensure that the trainee, in consultation with their nominated consultant trainer, completes a personal development plan, setting, agreeing, recording and monitoring the content and educational objectives of the placement.
- To ensure that the trainee's consultant trainer undertakes regular appraisals with the trainee (typically one at the beginning, middle and end of a placement) and creates a written report. Ensure that both parties agree to the outcome of these sessions and keep a written record.
- To discuss the trainee's progress with each consultant with whom a trainee spends a period of training and involve them in the in-house assessments and formal end of year annual review process.
- At the in-house assessments, inspect the trainee's logbook and ensure that the trainee is making the necessary clinical and educational progress.
- To ensure patient safety in relation to trainee performance by the early recognition and management of those doctors in distress or difficulty. Put into place a plan for any trainee identified as having difficulties.
- At each in house assessment, inform trainees of their progress and encourage them to discuss any deficiencies in the training programme, ensuring that records of such discussions are kept.

Chief Examiners for Part II Examinations

Responsible for the conduct of Part II examination in Dublin every year and participation in the UK training body exam preparation.

Part I and Part II lecture Coordinators

Arrange Part I and Part II lecture schedules every academic year and communicate it to the trainees.

The Consultant Trainer

While all of the consultant radiation oncologists will have contact with the trainees, the consultant trainer is a consultant radiation oncologist who has been identified by the local



training coordinator as being a trainee's trainer for the duration of the trainee's placement with that individual consultant.

The consultant trainer is expected to:

- Complete a personal development plan with their trainee at the start of each placement, setting, agreeing, recording and monitoring the content and educational objectives of the placement.
- Undertake regular appraisals with the trainee (typically one at the beginning, middle and end of a placement) and complete a written report with the trainee, which the trainee will upload to MedHub.
- Discuss the trainee's progress with the local training coordinator in advance of each in-house assessment and prior to the formal end of year annual review process.
- Ensure patient safety in relation to trainee performance.
- Inform the local training coordinator of any concerns or difficulties that may affect the trainee's training.

Curriculum evaluation

The radiation oncology committee holds its meetings in the Faculty of Radiologists office in RCSI. Trainees representatives and the local training coordinator from each hospital attend and provide feedback on the training programme, as well as suggestions for development of a QI initiative.

Evaluation of the Supervisor and Trainer Effectiveness

Trainees participate in review of the training programme at their annual faculty assessments. Confidential anonymised feedback from trainees is also obtained in the form of an anonymised survey. This information is reviewed and suggestions are taken into consideration for subsequent years.

Quality of teaching and supervision feedback is sought from trainees on the quality of teaching from FFR RCSI Part 1 and Part 2 lectures.



Evaluation of Trainee Progress

Trainee progress, caseload and case mix are measured every year by a standardised logbook/portfolio during the annual assessment.

Outcome Evaluation

The Faculty of Radiologists retains a list of all graduates from the Radiation Oncology programme. This is via records of FFR RCSI (fellowship of Faculty of Radiologists, RCSI). Graduates are encouraged to continue membership of the Faculty of Radiologists. Data regarding exam success rate, post training employment and contribution to the health service is also maintained. Graduate trainees are invited to contribute to faculty activities such as annual scientific meetings to share their experiences.

Training Regulations

Application and Admission

The application is usually open in September/ October each year. Details are published on the faculty website.

To be eligible for the radiation oncology specialist training programme, candidates should meet the eligibility criteria below. Trainees will hold the title of specialist registrar (SpR) and will be appointed following interview by the Faculty of Radiologists RCSI, and assigned to designated training departments.

Eligibility

- All applicants must have a minimum of three years clinical experience - one year as an intern and two years as an SHO
- All applicants must be registered or eligible for registration with the Irish Medical Council (www.medicalcouncil.ie).
- Applicants must meet the English Language requirements as detailed on the faculty website before applying for the training scheme.



- The attainment of an MRCPI or other equivalent higher qualification is not required for eligibility. However, additional qualifications by applicants will be viewed favourably during the SpR interview process.

Application Procedure

The application procedures are available on the faculty website. The application procedure and the shortlisting criteria are updated annually.

Successful Applications

Following completion of the interview process, applicants will be informed of their acceptance or non-acceptance into the training programme. The successful applicants must, prior to taking up appointment, obtain:

- Registration certificate– Irish Medical Council.
- A certificate of Medical Insurance from one of the recognised medical insurance companies, i.e. Medical Protection Society or the Medical Defence Union.
- A student visa from the Department of Foreign Affairs (where applicable).
- A work permit from the Department of Enterprise and Employment (where applicable).

Length of training / Flexible (Part-Time) Training

The period of training is five years of certified specialist professional training. Candidates will be appointed to the training programme for a period of 5 years, provided attendance, work ethic and general conduct is deemed satisfactory by the Medical / Clinical Director and the hospital training coordinators (HTC) of their accredited training departments.

All periods of time specified are full-time equivalent.

Flexible (part-time) may be undertaken by SpRs. Flexible SpRs must complete 5 full-time equivalent years of training and will therefore require more than 5 chronological years to be eligible for entry onto the Specialist Register. The time required will be assessed on a "pro-rata" basis and according to the acquisition of clinical skills recorded in their training logbook. They will be subject to annual assessments similar to fulltime SpRs.



Certificate of Satisfactory Completion of Specialist Training (CSCST)

This is available to Specialist Registrars upon completion of five accredited years of training. It will only be available after the last day of fifth year. The faculty will not be able to provide CSCST earlier than this.

If all five years of training have been completed with the Faculty of Radiologists, we will automatically provide you with a CSCST. Please ensure that we have the correct postal address on file.

By completion of Year 5 of formal SpR training and obtaining the CSCST, the SpR will be eligible to apply to the Irish Medical Council to be placed on the Irish Specialist Register as a Radiation Oncologist (see details on Faculty website www.radiology.ie).

Resignation

An SpR wishing to resign from the programme will have to serve notice in writing in accordance with their contract of employment to the national training coordinator (NTC), their hospital training coordinator (HTC) and their hospital's HR department.



List of Appendices

Appendix 1: Curriculum Matrix

Appendix 2: Curriculum Map

Appendix 3: Underpinning Scientific Knowledge / First Part Exam Syllabus

Appendix 4: Radiation Oncology/ Final Exam Syllabus

Appendix 5: Progression Criteria

Appendix 6: Trainee Journey Map

Appendix 7: Needs Assessment

Appendix 8: Duties and Responsibilities of SpRs

Related Documents

- **Examination Regulations**
- **Leave Regulations**
- **Out of Programme activities and research**



References

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