



The ROYAL COLLEGE of  
OPHTHALMOLOGISTS

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Postgraduate Medical Training

# Cataract Surgery syllabus

Patient Management domain

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# 1 Introduction

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## Definition of Special Interest Area (SIA)

Cataract surgery is the most commonly performed ophthalmic operation. Most often this is performed purely for visual rehabilitation, but will occasionally be performed for other reasons, such as uncontrolled intra-ocular pressure.

Phacoemulsification cataract surgery is usually employed and surgeons need to understand and master techniques that underpin the various stages of this procedure, learning skills they can adapt to more complex eyes. They must understand phacodynamics in order to adapt their technique to different cataract types. Initial learning at each stage can take place in a supervised simulated environment.

Cataract surgeons must discuss, plan and manage the optimal refractive result for their patients undergoing cataract surgery. They should understand how the result can be augmented by techniques, that they themselves may not perform such as use of multifocal lenses and laser refractive surgery.

## 2 Syllabus

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Level 1	
Learning Outcome	Descriptors
<i>An ophthalmologist achieving this level will:</i>	
<b>Independently perform a patient assessment and investigations sufficient to identify, describe and interpret clinical findings to arrive at differential diagnoses.</b>  <i>These descriptors are replicated on all SIA syllabi (i-xi)</i>	<ul style="list-style-type: none"><li>▪ Demonstrate effective consultation skills, including active listening skills.</li><li>▪ Take ophthalmic and relevant systemic clinical histories appropriate to the clinical problem and patient's needs, eliciting the patient's ideas, concerns and expectations.</li><li>▪ Take a family history, and draw a pedigree chart as appropriate.</li><li>▪ Establish an effective, empathetic, compassionate and respectful doctor-patient relationship.</li><li>▪ Demonstrate cultural and social awareness.</li><li>▪ Understand the risks, professional responsibilities and safeguards of remote consultations, e.g. telephone, online consultations.</li> <li>▪ Measure and record visual acuity for near and distance using an appropriate method and interpret the results. Understand the pros and cons of different methods of assessment for different patient groups.</li></ul>

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- Be able to approximate equivalent levels of vision in Snellen, logMAR or EDTRS letter scores.
- Understand and interpret an optometric examination, including the assessment of vision and binocular vision. Interpret the refraction result.
- Assess other visual symptoms with appropriate tools e.g. Amsler chart for visual distortion, Ishihara or other appropriate test for colour vision.
- Assess and interpret normal and abnormal visual fields by confrontation, understand the reliability of this method and when to arrange more detailed visual field analysis.
- Assess the pupil for abnormalities of shape, size and reaction, including for Relative Afferent Pupillary Defect (RAPD).
  
- Examine the eyelids including eversion of lids.
- Perform slit lamp biomicroscopy of the eye and adjacent structures.
- Examine the cornea, ocular surface, anterior chamber, iris and lens using appropriate techniques including assessment of the red reflex and slit lamp illumination techniques.
- Employ gonioscopy for examination of angle structures.
- Measure the intraocular pressure (IOP) accurately using a variety of applanation techniques and understand the limits of each.
- Examine the vitreous, the choroid and the retina, including the macula and optic nerve, using appropriate techniques including the direct ophthalmoscope, binocular indirect ophthalmoscope, and lenses for binocular fundus examination with the slit lamp.
- Understand how retinal examination techniques differ in magnification, orientation and field of view of the retinal image.
- Describe and record the ophthalmic findings according to usual convention.
- Perform a proficient medical examination relevant to ophthalmology, including examination of the neck, skin, nose, joints and neurological system.
- Understand the associations between clinical findings in different parts of the eye.

	<ul style="list-style-type: none"> <li>▪ Understand the associations between systemic and ophthalmic diseases.</li> <li>▪ Select investigations appropriate to the likely diagnosis.</li> <li>▪ Understand and apply knowledge of instrument technology relevant to ophthalmic practice.</li> <li>▪ Create differential diagnoses including common conditions and those that are sight or life threatening, where appropriate.</li> </ul>
<p><i>These descriptors are specific to the Cataract Surgery syllabus (iii)</i></p>	<ul style="list-style-type: none"> <li>▪ Employ the slit lamp to identify the various morphological types in cataract.</li> </ul>
<p><b>Independently formulate and initiate a management plan for low complexity cases.</b></p> <p><i>These descriptors are replicated on all SIA syllabi (i-xi)</i></p>	<ul style="list-style-type: none"> <li>▪ Initiate a management plan, including referring to more experienced clinicians when appropriate.</li> <li>▪ Involve other health care professionals in patient management when appropriate.</li> <li>▪ Make appropriate referrals in a timely and efficient manner and in accordance with local protocols and guidelines.</li> <li>▪ Recognise when a patient’s clinical presentation needs priority and make appropriate arrangements to expedite their care.</li> <li>▪ Recognise where the patient’s vision may not meet the visual standards for driving and provide appropriate counselling.</li>   <li>▪ Explain diagnoses to patients in simple language, using visual aids, online patient resources, leaflets, 3D models of eyes and posters available in clinic.</li> <li>▪ Deliver information in an accessible way, including identifying and making arrangements for patients with hearing, speech or sight impairment, or those with English as a second language.</li> <li>▪ Communicate effectively and sensitively when breaking bad news and be prepared to give clear and honest information.</li> <li>▪ Utilise translators appropriately and in accordance with local policy.</li>   <li>▪ Understand and apply knowledge of general medicine and surgery relevant to ophthalmic practice.</li> </ul>

	<ul style="list-style-type: none"> <li>▪ Understand the associations between drugs and ophthalmic disease including biologics.</li> <li>▪ Recognise when a patient is seriously ill and make appropriate arrangements for the patient's care.</li>   <li>▪ Prescribe local and systemic medications safely.</li> <li>▪ Be aware of the indications, contra-indications, side-effects, and possible interactions of the drugs that are prescribed.</li> <li>▪ Be aware of the services and support available to patients and signpost appropriately.</li> <li>▪ Initiate appropriate referral to low vision and social services, and to eye clinic liaison officer where available.</li> <li>▪ Make accurate, legible, signed and dated records and use Electronic Patient Records (EPR) if available.</li> <li>▪ Contribute to the preparation of patients for surgery, including review of medical therapy prior to surgery (e.g. anticoagulants) to optimise the patient's outcome.</li> <li>▪ Understand the process of informed consent, following the principles set in law and by GMC guidance.</li> <li>▪ Be aware of ongoing research and offer research participation opportunities to patients as appropriate.</li> <li>▪ Contribute to the pre-operative assessment for local and general anaesthesia as part of a multidisciplinary team.</li> <li>▪ Recognise patient conditions that render either local or general anaesthetic hazardous.</li>   <li>▪ Use appropriate aseptic technique when assisting with or performing surgery.</li> <li>▪ Use the operating microscope competently, ensuring optimum operating position.</li> <li>▪ Use suturing techniques appropriate for different ocular tissues, demonstrating understanding of different sutures and knots.</li> <li>▪ Identify suture types, remove sutures from the eye and adnexa at the appropriate time and manage any retained material or wound problems.</li> </ul>
<p><i>These descriptors are specific to the Cataract Surgery (iii)</i></p>	<ul style="list-style-type: none"> <li>▪ Explain the use of lid hygiene to patients with lid margin disease.</li> </ul>

	<ul style="list-style-type: none"> <li>▪ Understand the significance to surgery of different morphological types of cataract, e.g. posterior subcapsular, hypermature.</li> <li>▪ Understand and perform the individual stages of cataract surgery before progressing to complete procedures. Practise in a supervised simulated environment.</li> <li>▪ Perform a continuous ongoing audit of cataract surgery cases in which significant complications occur.</li> </ul>
<p><b>Justify the diagnoses and plan with reference to basic and clinical science.</b></p> <p><i>These descriptors are replicated on all SIA syllabi (i-xi)</i></p>	<ul style="list-style-type: none"> <li>▪ Understand and apply knowledge of anatomy, of the eye, adnexa, visual pathways and associated aspects of head, neck, and neuroanatomy.</li> <li>▪ Understand and apply knowledge of the physiology of the eye, adnexa and nervous system.</li> <li>▪ Understand and apply knowledge of related general physiology.</li> <li>▪ Understand and apply knowledge of biochemistry and cell biology, in particular those aspects relevant to common eye diseases.</li> <li>▪ Understand and apply knowledge of pathology, particularly the eye, adnexa and visual system. This includes histopathology, microbiology and immunology and other branches of pathology. This includes macroscopic and microscopic appearances and laboratory techniques, including staining techniques, used.</li> <li>▪ Understand and apply knowledge of growth, development and senescence, and the anatomical, physiological and developmental changes that occur during embryogenesis, childhood and ageing relevant to ophthalmic practice.</li> <li>▪ Understand the development of normal and abnormal acuity, binocular vision and the control of eye movements.</li> <li>▪ Understand and apply knowledge of optics and medical physics, regarding ultrasound, laser, electromagnetic wavelengths, and radiological investigations relevant to ophthalmic practice.</li> <li>▪ Understand and apply the fundamental principles of genomics and apply knowledge of clinical genetics relevant to ophthalmic practice. This will include demonstrating an understanding of the genetic basis of disease</li> </ul>

	<p>(including different single nucleotide variations and copy number variations) and the genetic contribution to common complex disease (e.g. AMD).</p> <ul style="list-style-type: none"> <li>▪ Understand and apply knowledge of clinical therapeutics relevant to ophthalmic practice, including methods of action and pharmacokinetics of drugs used.</li> <li>▪ Understand and apply knowledge of statistics relevant to ophthalmic practice, for example in the interpretation and publication of research.</li> </ul>
<p><b>Work effectively with patients and the multi-professional team.</b></p> <p><i>These descriptors are replicated on all SIA syllabi (i-xi)</i></p>	<ul style="list-style-type: none"> <li>▪ Display the professional values and behaviours set out in the GMC’s Good Medical Practice.</li> <li>▪ Use professional judgement and expertise to apply the principles of the guidance to the various situations faced in practice.</li> <li>▪ Recognise the limits of own knowledge and competence and work within them.</li> <li>▪ Recognise the level of supervision commensurate with own training.</li> <li>▪ Show respect, courtesy, honesty, compassion and empathy for others, including patients, their carers and colleagues.</li> <li>▪ Recognise and respect diversity and ensure equality for patients, their carers, colleagues and all those involved in patient care.</li> <li>▪ Reflect on personal behaviour and its impact on other people and the working environment. Include reflection in the professional portfolio.</li> <li>▪ Respect patient dignity.</li> <li>▪ Take responsibility for own health and well-being.</li> <li>▪ Take appropriate steps to protect patients when own health is affected by illness or disability.</li> <li>▪ Make appropriate reasonable adjustments for patients.</li> <li>▪ Respect patient confidentiality and be aware of the implications of sharing information and the appropriate circumstances for disclosure of patient information in protecting the individual and society.</li> <li>▪ Work within appropriate health and safety legislation.</li> <li>▪ Work within appropriate equality and diversity legislation.</li> <li>▪ Understand and apply legislation for safeguarding.</li> </ul>



	<ul style="list-style-type: none"> <li>▪ Apply the principles of clinical governance and ensure patient safety is paramount in all they do.</li> <li>▪ Apply the professional duty of candour, demonstrating openness and honesty with patients and employers.</li> <li>▪ Deliver an honest apology if necessary and offer a clear explanation.</li> <li>▪ Use reporting tools for clinical incidents including serious incident and never events.</li> <li>▪ Participate fully in the follow-up of any critical incidents in which they have been involved and learn from them.</li> <li>▪ Demonstrate safe and effective handover.</li> <li>▪ Communicate effectively with colleagues in the same and other specialties, and check that information has been understood and actioned.</li> <li>▪ Understand the impact of human factors in communication, and how to mitigate them.</li> <li>▪ Write clear letters with diagnosis, treatment and management to patients and other health professionals.</li> <li>▪ Communicate in a timely manner with colleagues and managers in regard to leave and return to work plans, following local protocols, including immediate communication about sickness absences.</li> <li>▪ Proactively arrange meeting with supervisors, and attend these meetings.</li> <li>▪ Be aware of potential and actual conflicts of interest and declare them appropriately.</li> <li>▪ Obtain feedback from colleagues, including multi-source feedback and use the information obtained to develop clinical practice.</li> </ul>
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Level 2	
Learning Outcome	Descriptors
<i>An ophthalmologist achieving this level will, in addition:</i>	
<b>Independently manage patients at an appropriate work-rate, employing the most appropriate clinical examination equipment and investigation modalities.</b>	<ul style="list-style-type: none"> <li>▪ Manage patients, with non-complex conditions suitable for management by the generalist, with indirect supervision.</li> <li>▪ Manage patients, suitable for management by a generalist, at an accepted rate.</li> <li>▪ Manage time and resources effectively.</li> <li>▪ Demonstrate effective consultation skills, including effective verbal and non-verbal interpersonal skills.</li> </ul>

*These descriptors are replicated on all SIA syllabi (i-xi)*

- Identify and manage barriers to communication, including language barriers, sensory and cognitive impairment.
- Use the exophthalmometer and interpret the findings with relevance to the specific patient.
- Use appropriate tools to assess the cornea e.g. pachymeter and know when to use specular microscopy.
- Understand when to use, and competently employ a variety of lenses for binocular fundus and gonioscopy examination with the slit lamp.
- Use a portable slit lamp competently.
- Use a binocular indirect ophthalmoscope with a variety of lenses, selected to the situation and appropriate indentation.
- Perform refraction and understand the relevance and importance of the refraction.
- Assess a patient's spectacles using neutralisation techniques and focimetry.
- Assess a patient's binocular co-operation and assess whether optical correction for this is necessary.
- Select investigations appropriate to the likely diagnosis. Know when they need to be ordered urgently and how to interpret the results. Know their contra-indications, limitations and implications (including cost).
- Employ and interpret new methods of assessment and investigation when they are introduced into clinical practice.
- Assess the progress of a patient's condition and respond accordingly. This includes observation of the natural history of a disease and clinical improvement or deterioration in response to interventions.
- Understand and apply knowledge of lasers. Apply this knowledge when recommending laser treatment.
- Employ safe practice, including complying with local laser safety procedures.
- Have knowledge of the common Low Vision Aids and the conditions for which they may provide benefit.

<p><i>These descriptors are specific to the Cataract Surgery syllabus (iii)</i></p>	<ul style="list-style-type: none"> <li>▪ Understand and apply knowledge of lasers relevant to cataract and refractive conditions. Use this knowledge when discussing or recommending laser treatment.</li> </ul>
<p><b>Refine the differential diagnoses and management plan by application of clinical knowledge.</b></p> <p><i>These descriptors are replicated on all SIA syllabi (i-xi)</i></p>	<ul style="list-style-type: none"> <li>▪ Create prioritised differential diagnoses and reach a potential diagnosis.</li> <li>▪ Formulate a management plan based upon clinical assessment and, where appropriate, the results of relevant investigations.</li> <li>▪ Demonstrate that decisions are made by applying appropriate and clear clinical reasoning.</li> <li>▪ Recognise when a patient’s ocular problem is a manifestation of a systemic disorder and when an ophthalmic diagnosis may indicate an increased risk of a systemic illness.</li>   <li>▪ Know the likely infective organisms in cases of infection, how they are best isolated and identified.</li> <li>▪ Understand the indications and use of systemic and topical antimicrobials.</li> <li>▪ Recognise when the management plan involves a level of expertise that is beyond own competence.</li> <li>▪ Make appropriate referrals to other specialties, in a timely manner, using local pathways.</li> <li>▪ Understand the rationale behind, and perform or organise the ophthalmic examinations required by protocols in other specialties.</li> <li>▪ Know when patients should be jointly managed between specialties, and contribute to this management.</li>   <li>▪ Demonstrate the ability to reflect and learn from professional practice and clinical outcomes.</li> </ul>
<p><i>These descriptors are specific to the Cataract Surgery syllabus (iii)</i></p>	<ul style="list-style-type: none"> <li>▪ Plan the optimum refractive outcome for surgical procedures.</li> <li>▪ Recognise errors in biometry result and identify when they need to be repeated.</li> <li>▪ Interpret, and act upon the results of a vitreous biopsy.</li> </ul>

### Level 3

#### Learning Outcome

#### Descriptors

*An ophthalmologist achieving this level will, in addition:*

**Independently assess and manage moderate complexity patients, demonstrating an understanding of cataract procedures and selecting the most appropriate treatment according to current accepted practice.**

- Understand and apply knowledge of medicine and surgery relevant to cataract and refractive practice, to make diagnoses and recommend a management plan.
- Be informed by the patient's unique medical, psychological and social circumstances.
- Understand the tests and imaging techniques that might be helpful in deciding about and guiding treatment.
- Use with accuracy and efficiency instruments available to assess the patient, including biometry (both contact and non-contact) and keratometry.
  
- Implement a detailed management plan to include care from triage to discharge from care.
- Acknowledge and follow relevant guidelines or protocols, including application of appropriate formulae for lens calculation.
- Practise in line with the latest evidence.
- Understand the indications, risks and limitations of surgery and laser treatment and identify patients for whom these treatments would be appropriate.
- Involve the patient, and where appropriate, their carer, partner or relatives, in the choices about their care and enable them to express their informed consent, including about refractive outcome.
- Share decision-making by providing patients with appropriate and comprehensible information, prioritising the patient's wishes and respecting the patient's beliefs, concerns and expectations.
- Communicate the uncertainty of options in a manner that patients will understand.
- Manage difficult or challenging conversations.
- Develop situational awareness and an understanding of the impact of cultural and social issues.
- Enable patient self-management where possible.
- Understand and apply knowledge of clinical genetics relevant to cataract and refractive conditions.

	<ul style="list-style-type: none"> <li>▪ Advise patients about patterns of inheritance and recognise when it is appropriate to refer a patient for genetic counselling.</li> <li>▪ Recognise when it is important to offer a consultation with family members.</li> <li>▪ Recognise when a patient has had or is developing a complication or side effect from treatment and be able to manage this in an appropriate and timely manner.</li> <li>▪ Maintain an understanding of new developments in relevant technologies.</li> </ul>
<p><b>Risk assess and prioritise patients appropriately, recognising the need for special interest input.</b></p>	<ul style="list-style-type: none"> <li>▪ Manage patient referrals efficiently, according appropriate priority to referrals based on clinical need and in accordance with local and national guidelines.</li> <li>▪ Refer to more experienced clinicians when appropriate.</li> <li>▪ Manage acute presentations following local guidance.</li> <li>▪ Know the conditions and situations that warrant an urgent onward referral to other healthcare professionals, and be aware of the local policies and systems for making such referrals.</li> <li>▪ Make appropriate and reliable arrangements for results to be acted upon in a timely fashion.</li> <li>▪ Manage surgical waiting lists and other access to clinical services appropriately, intervening when clinical care for a patient is put at risk by inappropriate waiting list management.</li> </ul>
<p><b>Independently perform low risk phacoemulsification cataract procedures.</b></p>	<ul style="list-style-type: none"> <li>▪ Achieve safe and appropriate local anaesthetic for ophthalmic procedures.</li> <li>▪ Perform low risk phacoemulsification cataract procedures.</li> <li>▪ Use knowledge of phacodynamics to employ a suitable surgical technique.</li> <li>▪ Apply appropriate laser for the management of problems with the lens capsule after cataract surgery.</li> <li>▪ Perform aqueous and vitreous sampling in the management of endophthalmitis, and understand the risks of the procedure.</li> <li>▪ Constitute and administer intra-vitreous antibiotics.</li> <li>▪ Know how to handle any samples taken from the eye to increase the diagnostic yield and liaise with laboratory staff so that the</li> </ul>

specimens are correctly identified, presented and transported.

- Develop new skills in a supervised simulated environment.

#### Level 4

##### Learning Outcome

##### Descriptors

*An ophthalmologist achieving this level will, in addition:*

##### **Demonstrate advanced clinical management and surgical skills.**

- Demonstrate competency in advanced clinical diagnosis, investigation and management of cataract in outpatients, inpatients and emergency settings.
- Perform cataract surgery independently, including, but not limited to:
  - high myopes
  - high astigmatic error
  - those with previous anterior or posterior segment surgery
  - previous iritis
  - unusually hard or soft cataracts
  - white cataracts
  - small pupils
  - pseudoexfoliation syndrome
  - subluxated lenses and post-trauma
- Demonstrate ability to use monofocal, toric, sulcus and anterior chamber lenses.
- Demonstrate ability to manage problems including, but not limited to:
  - anterior and posterior capsule tears
  - iris complications
  - intraocular lens (IOL) misplacement or replacement
  - wound complications
- Manage anterior vitreous loss and anterior vitrectomy; placement of the secondary IOL into the sulcus.
- Identify and manage suprachoroidal haemorrhage.
- Use simulated environments to enhance practical skills for complex cases.
- Perform a whole list of cataract operations and take responsibility for the efficient management of the session.
- Understand the limitations of biometry, and manage cases accordingly, e.g. following corneal disease and surgery (including refractive surgery).
- By the end of training, undertake a prospective audit of 50 consecutive cataract cases where the surgery is performed within three calendar years of achieving

	<p>Level 4 Cataract Surgery. Post-operative refractive data must be provided on at least 10% of cases.</p> <ul style="list-style-type: none"> <li>▪ Maintain a record of activities, using the RCOphth electronic logbook.</li> </ul>
<p><b>Manage the complexity and uncertainty of cataract surgery cases.</b></p>	<ul style="list-style-type: none"> <li>▪ Understand and apply advanced knowledge of cataract and refractive conditions and practice.</li> <li>▪ Independently lead and manage cataract clinics.</li> <li>▪ Investigate, diagnose, and manage post-operative complications such as: <ul style="list-style-type: none"> <li>- Endophthalmitis</li> <li>- refractive surprise</li> <li>- cystoid macular oedema</li> <li>- corneal decompensation</li> </ul> </li> <li>▪ Co-manage patients with anterior or posterior segment subspecialists, where appropriate.</li> <li>▪ Apply knowledge and skills in a flexible manner.</li> <li>▪ Utilise existing skills to novel situations.</li> <li>▪ Adapt management strategies to take account of patients' informed preferences, particular circumstances, age and co-morbidities, respecting patient autonomy.</li> <li>▪ Manage the uncertainty of treatment success or failure and communicate effectively with patients where there is uncertainty.</li> <li>▪ Manage the personal challenge of coping with uncertainty.</li> <li>▪ Evaluate published developments in cataract and refractive knowledge and practice and modify own practice appropriately.</li> </ul>
<p><b>Apply management and team working skills appropriately, including in complex, dynamic situations.</b></p>	<ul style="list-style-type: none"> <li>▪ Use highly developed consultation skills efficiently to manage busy clinics whilst managing patient expectations.</li> <li>▪ Assist with decision-making where there are cognitive impairment barriers, employing Independent Mental Capacity Advocate (IMCA) services or equivalent if necessary.</li> <li>▪ Understand how culture or religious beliefs can affect patients' decision making and needs, and communicate these effectively to the team.</li> <li>▪ Be sensitive to social situations and the impact these may be having on the patient, their carers and their disease.</li> <li>▪ Understand when information must be shared more widely with schools, carers, police, etc. and understand the responsibilities and implications of sharing information.</li> <li>▪ Receive and respond to communications in complex or challenging situations.</li> </ul>

	<ul style="list-style-type: none"> <li>▪ Liaise and support colleagues from other subspecialties to optimise patient care, when co-management is required.</li> <li>▪ Promote professional values within the team.</li> <li>▪ Work as a collaborative member of a team, respecting differences of opinion.</li> <li>▪ Accept constructive and appropriately framed criticism.</li> <li>▪ Support colleagues.</li> <li>▪ Be an advocate for patients.</li> <li>▪ Manage significant events and complaints, including writing formal reports.</li> <li>▪ Understand and follow local policies in response to complaints.</li> </ul>
<p><b>Be an effective supervisor, teacher and trainer of cataract surgery.</b></p>	<ul style="list-style-type: none"> <li>▪ Participate in education/training of medical students/junior trainees, and allied health professionals in cataract surgery.</li> <li>▪ Supervises and accredits trainees to Level 3 in cataract surgery.</li> </ul>

### 3 Level 4: Indicative Time

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The indicative time for training at this level is **6-12 months** of full-time equivalent, which should be integrated longitudinally across the entire training programme.