Institute of Physics and Engineering in Medicine

Training Scheme
for
Clinical Technologists
(Healthcare Science Practitioners)

November 2020

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Preface

This document is only available on-line and it replaces the IPEM Training Scheme Prospectus for Clinical Technologists in Healthcare, October 2001, and previous versions of the Handbook.

The document gives guidance on the scheme and how it operates and it should be used in conjunction with a number of other documents. Hyperlinks have been included in the document. If any further assistance is required contact the IPEM office

The term 'Technologist' and 'Practitioner' can be considered as interchangeable within this document.

Key Words and Links

Accreditation	*Certification of competence to deliver training in a specified subject or area of expertise.*
Accredited Registers	*A new approach to regulation recently established by government in preference to statutory registers.*
Departments	*Any organisation working in healthcare which wishes to be recognised as an accredited Training Centre.*
HCPC	*Health and Care Professions Council (previously the Health Professions Council (HPC))*
MSC	*Modernising Scientific Careers*
NSHCS	*National School of Healthcare Science was established through the Modernising Scientific Careers programme to support the implementation and delivery of the new healthcare science education and training programmes. It is also involved in accreditation and assessment.*
PSA	*Professional Standards Authority*
Statutory Regulation	*Regulation covering health and care professionals working in occupations that parliament has said must be regulated.*
The RCT	*The Register of Clinical Technologists*

1. The Training Scheme

1.1 Introduction

Clinical Technology is concerned with the practical application of physics, engineering and technology to clinical practice and healthcare. These are applied to the diagnosis, treatment and prevention of human disease, and maintaining and improving the quality of life.

Clinical Technologists are Healthcare Scientists who work in NHS hospitals, private health care, academic institutions and the medical device industry. Upon successful completion of the Institute of Physics and Engineering in Medicine (IPEM) Clinical Technologist Training Scheme, they are eligible for registration on the Register of Clinical Technologists (the RCT – www.theRCT.org.uk), with the following titles:

- Medical Engineering Technologist
- Radiation Engineering Technologist
- Rehabilitation Engineering Technologist
- Renal Technologist
- Nuclear Medicine Technologist
- Radiation Physics Technologist
- Radiotherapy Physics Technologist

The development of the MSC programme developed through the Department of Health has developed an honours degree programme in Healthcare Science. This has been accepted by the RCT as providing the acceptable educational and workplace-based competencies to be used as an appropriate training programme to develop a Basic Clinical Technologist.

IPEM has recently signed a Memorandum of Understanding (MoU) with the NSHCS to cover joint working on training programme elements including the curricula and accreditation.

1.2 The IPEM Training Scheme

The training scheme aims to ensure that all Clinical Technologists following the scheme develop the appropriate knowledge and skills to practice competently in their chosen speciality. It promotes good practice and aims to ensure the protection of the public.

The Professional and Standards Council (PSC) has overall responsibility for developing all aspects of training of Clinical Technologists, including ensuring the appropriate content and assessment of the different elements of training and the accreditation of centres in which training takes place. This work is led by the CT Training Scheme Lead (appointed by PSC) in collaboration with the IPEM Membership and Training Manager.

It is important that the training scheme should be flexible enough to accommodate those new to the profession but also those that bring existing knowledge and skills. It is essential to have the ability to accredit prior learning and/or experience (APEL) and provide training pathways through an education only route or an equivalence route.

The training requirements of the IPEM Clinical Technologist Training Scheme are aligned to the Practitioner Training Programme (PTP) curricula published by the National School of Healthcare Science. Training programmes normally match the relevant PTP curriculum but alternative, equivalent training programmes can be proposed in trainee applications.

For those training in Nuclear Medicine, the Nuclear Medicine Curriculum was updated to include computed tomography (CT) competencies, which must be included in Nuclear Medicine training plans for all Nuclear Medicine trainees enrolled from October 2021 onwards.

The RCT Scopes of Practice specify the work carried out by registered clinical technologists working within a specific field. These scopes are living documents; new scopes may be added and existing scopes updated. The IPEM Clinical Technologist Training Scheme evidence competence in a discipline across an entire Scope of Practice.

1.3 Registration

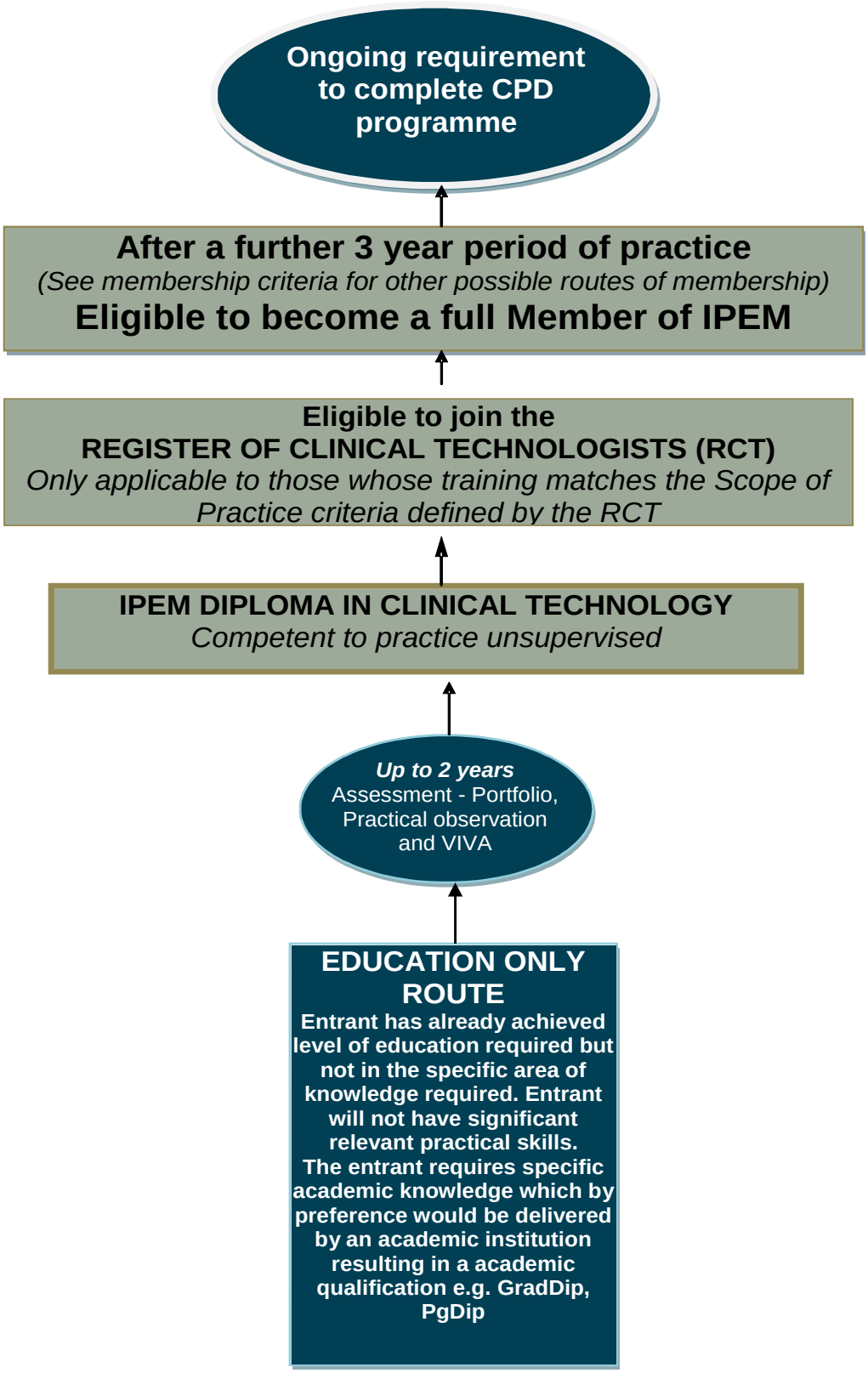
The RCT was first established in 2000 and is now run in partnership by the Association of Renal Technologists (ART), the Institute of Healthcare Engineering and Estate Management (IHEEM) and the Institute of Physics and Engineering in Medicine (IPEM). Since September 2015 the RCT has been accredited by the PSA and holds the PSA quality mark.

To satisfy future registration requirements, the RCT and the associated professional body partners continue to support the view that the profession should take a formal approach to the training of new entrants to the profession to ensure they have an appropriate foundation to their careers.

Workplace requirements and the skill mix required are continually changing as our knowledge and technology capabilities improve. This means that there is a requirement for all scientific staff to review working practices and areas of work to ensure they provide the most effective and efficient services required. Training is a dynamic process that will evolve as disciplines evolve. IPEM will monitor the needs of the services that technologists provide now, and in the future, with the aid of the RCT, the NSHCS, other professional bodies and the PSA, review, update and modify the training scheme and the Scopes of Practice on a regular basis.

1.4 Career Development

Figure 1 Schematic Representation of IPEM Routes of training timescales given are nominal



Read in conjunction with Guidance for accredited training centre

2. Organisation of Training

2.1 Accredited Training Centres

All departments who wish to provide training through this scheme must be accredited by IPEM. Accreditation will depend on the type of training and the subject range being provided. Departments will be expected to demonstrate that they are able to deliver or resource the level of training proposed. They must also demonstrate a commitment to training, i.e. supporting staff to become moderators and to the trainee; by way of protected training time (a minimum of half a day per week).

In order to provide the appropriate levels and range of training it may be necessary for Departments to join together to form a training consortium. This will be especially pertinent for small departments which on their own may not have the manpower or resources required to run as a Training Centre.

All applications for Training Centre status will be vetted and approved by the CT Training Centre Accreditation Coordinator in conjunction with the CT Training Scheme Lead as necessary. Detailed proposals relating to the information required for applications and details of the accreditation process are published separately.

Subject Areas
The main options are outlined in the current Scopes of Practice as defined by the RCT together with a list of competencies required for each subject area. Further options may become available in the future and these will be added when available. To ensure eligibility to join the RCT trainees are required to undertake training in one of the Scope of Practice subject areas.

Trainees will be required to demonstrate that they have attained practical skills with appropriate underpinning knowledge by covering the competencies listed in one of the Scopes of Practice subject areas or the MSC Practitioner Training Programme (PTP) documents.

Training Centres are encouraged to provide some short-term placements in order to give their trainees a wider overview of healthcare service delivery unless they are relevant to the main subject.

2.2 The Trainee/Pre-Registration Technologist

The term trainee will be used to represent a person following the IPEM Training Scheme and is wishing to obtain registration.

Any individual who is registered as a **trainee** must follow diligently the instructions of those responsible for facilitating the training programme. In the event of any difficulty or problem with the implementation of the agreed training programme, which cannot be resolved by the Training Supervisor, the trainee may make a direct approach to the Training Coordinator or, if applicable, a representative of the educational provider or to IPEM to resolve the situation.

The trainee must be fully engaged in the development of their training plan. The onus on completing the agreed programme of training rests with the trainee. A suitable record of training progress must be maintained by the trainee through the training portfolio. These must be neat and legible and be completed in a timely manner. The use of an electronic training portfolio, in the form of a single PDF, is mandatory.

2.3 Training Coordinator

The Training Coordinator for each Accredited Training Centre is responsible for the training scheme. This person will be based in the training centre/consortia and they will be the main contact for the training scheme. The Training Coordinator should be able to sort out the majority of problems or enquiries that trainees have regarding the scheme. For small training centres the Training

Supervisor may take on the duties of the Training Coordinator.

The Training Coordinator should be contacted to deal with any problems over the operation of the training scheme. (By agreement, the Training Supervisor may be the main contact point.) Any unresolved problems should be brought to the attention of the External Moderator as soon as possible. See also 'Guidance Notes for Training Coordinators'.

2.4 Training Supervisor

Trainees will be allocated a Training Supervisor for the subject area.

The role of the Training Supervisor will be fundamental in ensuring that the trainee is developing and that the training plan is progressing.

The Training Supervisor will oversee the training and the allocation of trainers. It is essential that throughout the duration of the scheme regular (at least once per month) formal, documented meetings take place between the trainee and the Training Supervisor to plan and review training. This must be documented use the following; *Supervisor's Review Form* and *Supervisor's Directly Observed Practical Skills (DOPS) and log*. These forms can be obtained from your local Training Coordinator or directly from the IPEM office. N.B. the DOPS log will form part of the trainees final mark and is therefore essential.

The Training Supervisor will ensure the training is assessed throughout the training period and will, where applicable, report training progress to the Training Coordinator. These reports form part of the trainee's portfolio. Please note that the External Moderator will request period submission of Supervisors Assessments and DOPS. These top level form evidence how the training plan is being implemented / evolving and how the trainee is being supported by their Supervisor.

See also 'Guidance Notes for Training Supervisors'.

2.5 External Moderator

The External Moderator ensures that the professional standards required by the IPEM are fulfilled. In this respect the External Moderator has two roles relating to the Training Centre and the trainee:

- S/he will consult with the Training Coordinator, the Training Supervisor and the trainee and will advise on any problems associated with the training scheme both from the viewpoint of the Training Centre and the trainee. Any unresolved issues will be reported to the CT Training Scheme Lead.
- S/he will assess and monitor the progress of the training and act as an IPEM appointed moderator for assessments carried out locally by the Training Centre.
- Moderators may be asked to perform the viva examination
- S/he will documents assessments using the following:
  External Moderators Visit Form
  (2020 version, which contains a Direct Observation of Practical Skills)
  Portfolio Marking Template
  Final Assessment Form

Current forms are available on the IPEM website via your login.

(Use the following path: My IPEM > My Committee and Group Workspace > CT Moderators Workspace > IPEM Document Store > CT Moderators > Forms and Templates)

See also 'Guidance Notes for External Moderators and Supporting Moderators'

2.6 Supporting Moderator

A named Supporting Moderator will be appointed at a suitable point during the training period. The Supporting Moderator's primary role is to independently assess the trainee's portfolio and to offer support to the External Moderator. Supporting Moderators may be asked also be asked to perform viva assessment.

See also 'Guidance Notes for External Moderators and Supporting Moderators'.

The provision of moderators by accredited centres is crucial for the smooth running of the training scheme and to ensure sufficient support for trainees. Each centre/consortium must provide a minimum of one moderator per subject area accredited and these moderators must be available to take on at least one trainee at a time when requested. If a moderator is unable to fulfil this requirement and a period of two years passes without trainee allocation, they will be considered 'inactive' and the accredited centre will be required to provide an alternative moderator in order to retain accreditation in the relevant subject area.

3 Training Routes

3.1 Entry Onto the IPEM Training Scheme

The ability to communicate effectively in English is critical to working effectively as a health professional in the UK. Consequently, we can ask you for information about your ability to use English.

For entry onto the training scheme the following will apply regardless of the training route:

a. Any trainee whose first language is English requires a level 2 qualification (e.g. GCSE at grade C or above) or equivalent.
b. Any trainee whose first language is not English will be required to obtain an International English Language Testing System (IELTS) certificate. A minimum score of 7.0 with no element below 6.5 is required. If any other testing system is used, you must be able to provide equivalence with IELTS.
c. Any overseas (non-UK) qualifications must demonstrate equivalence comparison using the UK NARIC (National Academic Recognition Information Centre**)** service.

3.2 Application onto the IPEM Training Scheme

The Training Coordinator must submit a fully completed application form that meets the administration requirements for IPEM. (This may be undertaken by the Training Supervisors in some departments.) The application should contain:

a. Evidence that the academic elements of the application align with the National School of Healthcare Science PTP BSc Healthcare Science Curriculum (Clinical Engineering or Medical Physics) learning objectives. A copy of the qualification certificate and a copy of the associated academic transcript is required. This should be at least a level 6* qualification, typically a BSc or BEng. The minimum requirement at entry is a level 4* qualification, typically an HNC or HND backed up with a plan to deliver equivalent level 6* learning concurrent to training.
b. A list of competencies to be achieved during training which are comparable to the National School of Healthcare Science PTP BSc Healthcare Science Curriculum (Clinical Engineering or Medical Physics) work-based learning competencies. Please note that an academic transcript detailing levels and credits is not a recognised qualification and will not be accepted in lieu of such. Reference should also be made to the RCT Scopes of Practice.
c. A training plan that shows when and how the intended training will be delivered over the agreed training timespan (e.g., a schedule or timetable).
d. A registration fee will be charged for the standard duration of the training scheme (24 months) and an official purchase order must be submitted.
e. Any trainee requiring an extension to the training period will be required to submit a deferral application and if approved, an additional rolling six-month pro-rata fee will be payable. (see 3.3 Enrolment).

*Applies to England, Wales and Northern Ireland. An alternate qualification framework is used in Scotland where comparable levels are required.

3.3 Enrolment

Enrolment onto the training scheme will now be limited to two intakes per year, to fall in line with academia, in:

October
April

This will ensure that applications are dealt with, and moderators are appointed, in a timely manner.

The duration of the training scheme will be a standard 24 months so that an assessment and viva date can be determined. Should a trainee wish to increase this training period they should submit a Deferral of Assessment request form to the IPEM national office. The request will be considered by the CT Training Scheme Lead, the Chief Moderator and the appropriate Registrar (the 'Deferral Panel'). NB: a penalty may be applied to extensions – maximum of a PASS. An additional fee may also be applied.

3.4 Serious Illness/Absence

The IPEM Diploma (T) programme is a 24-month period of formal training that completes a scope of practice ensuring fitness to practice. Lengthy breaks during this short period of skill and competency acquisition are at times unavoidable; however significant breaks in study have a deleterious effect on newly acquired skills and degrade any competencies achieved. This brings into question the candidates previously completed evidence base. Upon return to work, a schedule of DOPS must be documented by the training supervisor to refresh previously completed competencies. the results of which must be forwarded to the External Moderator.

All deferrals / extensions are handled as outlined in sections 3.2 & 3.3.

A significant break in study is defined as between 6 to 12 months.

A break of over 12 months in a programme that lasts 24 will result in the candidate being removed from the training programme. While IPEM is sympathetic the skill / competency base of the candidate is highly questionable as would be there as would be their fitness to practice. They may re-apply but all standard fees and scheduling will apply in all cases

3.5 Induction Day and Timetable

An induction day for trainee Clinical Technologists will be held in the month following enrolment in order to provide guidance to trainees on their responsibilities. Information relating to training plans, competencies and portfolio will be given in:

November
May

This is an opportunity to ensure all trainees are given consistent information regarding the requirements of the scheme and for them to ‘network’ with their peers.

	Applications received between April – September	Applications received between October – March
Enrolment	**October**	**April**
Induction	**November**	**May**
Ongoing training Practical assessments Moderator visits	*20 month training period*	*20 month training period*
Final practical assessment	**August**	**February**
Portfolio received by moderator	**By 30 September**	**By 31 March**
Moderator marking to IPEM office	**By 31 October**	**By 30 April**
Viva	**November**	**May**

Please note, vivas will not proceed for any trainee if any other elements are incomplete (i.e. the final practical and the portfolio).

3.6 The Education Only Route

a. The trainee should enter the profession with an appropriate scientific level qualification, which is recognised by IPEM but lacks relevant specific educational and/or practical training or experience.

   For new people to the profession the appropriate **educational to be achieved is level 6 (FHEQ)**. The trainee is expected to supplement any shortfall in education by the end of the programme.

   The trainee will be required to follow a full training programme including knowledge and practical competencies, but previous knowledge and experience may be taken into account following a documented accreditation of prior learning and experience process (APEL) process. Reference should also be made to the RCT Scopes of Practice.

b. The trainee should be employed within an IPEM Accredited Training Centre. If this is not the case IPEM would be happy to help with a Training Centre application.

c. Before applying to join the IPEM Training Scheme the Department must conduct an individual training review. The training review will devise the detailed basic training plan which must ensure that the appropriate training competencies are identified, and any lack of knowledge and understanding is addressed. It should also be used to identify any areas which can be accredited to prior learning or experience. The training plan should provide a timescale for when the various aspects of the training will be delivered. It is accepted that training delivery may change but the timescale information will allow an assessment of the progress of the training.

   Training competencies and knowledge requirements may be based on the RCT Scope of Practice or on the MSC PTP documents (see MSC Learning Guide(s)).

   Any variations, additions, restricted practice; omissions or APEL relating to the competencies or underpinning knowledge must be clearly identified and documented in the training plan.

d. A trainee's application to the scheme should be completed as soon as possible even though enrolment is now formally twice a year. A copy of the training plan should be submitted to IPEM for consideration by the training scheme registrars. The training plan should clearly demonstrate how it fulfils the requirements of the Scope of Practice and that any educational component will be delivered at an appropriate level. On approval by the registrar, the IPEM National Office will appoint an External Moderator (section 2.6) and provide them with a copy of the approved training plan including the competency and educational elements to be followed.

e. It is essential that all aspects of the recording of evidence of training are started immediately.

f. It is also important that the trainee attends a trainee induction day.

g. The trainee following this route will not normally be required to study a full BSc (Hons) course as they should have an educational qualification or equivalent at the appropriate level, however, it is likely that some further academic study will be required. Normally this would be delivered through a formal HEI course (e.g. PgCert, PgDip or M-Level modules). Where this is not possible or practicable it may be delivered outside of a formal HEI course (e.g. by local Training Centre staff). If training is delivered outside of a formal HEI course, there is a requirement to demonstrate that this is being delivered to the appropriate standard (BSc (Hons)).

h. The Accredited Training Centre normally delivers the competence-based workplace training. If it is unable to deliver any aspects it should make suitable arrangements for the competencies to be covered at another centre.

i. Properly constructed manufacturer courses are an excellent way of providing both knowledge and practical skill-based elements of training and are to be encouraged. It is important to pick up the competencies covered in this process so as not to duplicate training unnecessarily.

j. A record of the competency together with any other information including results (anonymised) and educational knowledge delivered should be recorded in a **training portfolio**. The portfolio must be in electronic form; specifically one PDF. The gathering of information for the portfolio should be started immediately the trainee takes up their post. It is also important that the reflective

practice element of the portfolio is also started immediately.

This portfolio will need to be assessed and marked by the workplace trainers/supervisor. This may mean that some training of staff in those roles will be required. The portfolio will be examined and marked as part of the final assessment by an External Moderator or some other appropriate person appointed by IPEM.

k. The trainee will be required to undertake a central Viva according to the agreed timetable.

4 Training Process

4.1 Training

The Training Centre providing the workplace training will ensure that the training competencies are covered and that any specific underpinning knowledge that won't either be covered by a formal education course or needs to be contextualised to the activity is delivered. Any training competencies (practical or knowledge based) accredited to prior learning or experience should ideally be done prior to the training programme commencing and the rationale for APEL must be recorded and submitted to IPEM.

The Training Supervisor will meet formally with the trainee at least once a month and will discuss and review the training progress in the last month. They will agree the training targets for the next month. The training delivered in the workplace will entail the trainee operating with an appropriate level of supervision. It is suggested that where appropriate and practicable the trainee is taken through the training stages of observing, assisting, performing under close supervision and final performing independently but with remote and outcome supervision.

If any training competencies cannot be delivered in a particular workplace the Training Supervisor/Coordinator must ensure arrangements are put in place (i.e. visiting another site) to enable the competencies to be covered.

Where the trainee covers a wide Scope of Practice (e.g. Radiotherapy Physics) but the role in which they are employed covers a smaller part of that practice (e.g. dosimetry planning) they still must experience all areas (e.g. Dosimetry QA, Mould Room, Brachytherapy). Trainees are not required to be fully competent (i.e. experienced and able to work unsupervised) in all of these areas in their Scope of Practice where they will not be practicing however, they do have to be 'process competent'. This means they must understand the processes, the part they play in the patient pathway and where possible perform the skills as much as practically possible. In some patient critical areas this may be restricted to training systems or just observation. The training portfolio must however demonstrate a good understanding across the whole training. It should be made clear in the portfolio where restricted training has been employed.

The trainee needs to collect different types of evidence as they proceed with training. For example, a well-planned DOPS is a witness statement documenting multiple competencies. Training may also require critical scientific analysis or additional knowledge gained from background reading (which would need to be appropriately referenced e.g. using the Harvard or Vancouver method consistently). How this theoretical knowledge base informs practice must be documented.

Evidence of hands on experience (practical training is essential). The trainee should demonstrate a good basic understanding of the subject. The evidence submitted should also demonstrate those aspects of core competencies associated with the role, e.g. communication, presentation skills, appropriate use of language (medical and scientific terms) and an appropriate level of anatomy, physiology and disease pathologies.
A useful benchmark of the principles, values and the standards of behaviour and practice can be found in the Academy of Healthcare Science Good Scientific Practice document.

The main evidence of training should be recorded in a personal training portfolio.

4.2 Training Structure

The training needs no longer be split into part 1 and part 2; however, the information below exists for information and as a reference for those that currently are on such a structured programme or for those centres that continue to follow that structure.

4.3 The Training Portfolio

Format

The portfolio is the main record of evidence of training. It should contain information which demonstrates the work that has been carried out and the number and the level of competencies which have been acquired as well as appropriate educational knowledge.

The portfolio must be in an electronic format and may include photos, scans etc. At the point of submission it must be in the format of one PDF document. The pathway through the training should be obvious, as should ease of navigation via hyperlinks as it will affect your supervisor and moderator's ability to assess you. The External Moderator may request a review of the portfolio for comment pre-submission. A PDF format ensures the portability of most portfolios e.g. they may be e-mailed.

The portfolio should not be a textbook and should largely contain the trainee's own training work. A well-structured portfolio which clearly demonstrates at least 80% of the competencies as described in the scope of practice is a minimum requirement.

The portfolio should be divided into appropriate sections. There should be a contents page, each section, competency and associated evidence should be clearly identifiable.

The portfolio should also clearly identify the trainee and any others that have been involved in the training process.

Any evidence provided relating to patients must have all identifiable data removed. Failure to do so will result in sanctions being applied; the most severe resulting in a fail. This will also be reported to your employer as a breach of data protection.

When submitting the portfolio to the Moderators for final marking, prior to the viva, the portfolio must be a single PDF. It must not be submitted as separate files. For security reasons, if the portfolio is to be uploaded to the IPEM CT Portfolio Submission workspace, the IPEM office must be contacted in advance in order to obtain a password for the portfolio. For guidance on how to put your portfolio together, please read the E-Portfolio guidance.

Content

The purpose of the training portfolio is to provide evidence of training, should cover each competence (including any underpinning knowledge gained relating to the training undertaken) and should demonstrate competence as a Clinical Technologist. It should also show the trainee's development and ability to assess skills and understanding through reflective practice. The trainee should keep a copy of the training plan and keep a record of progress, assessments and reports.

The trainee must demonstrate that they have covered the major elements of the required competencies and that significant areas have not been omitted.

The portfolio is the trainee's opportunity to describe what they have carried out or learnt and the practical skills they have acquired.

The trainee should clearly record their level of involvement at each stage, i.e., observed, assisted, performed under supervision, performed independently.

The portfolio is not intended to be a textbook – the general layout should be well thought out and the

content should be well chosen, clear and concise.

The competencies covered within the various sections should be clear and be cross-referenced to the training plan competency list.

The portfolio should include clear references wherever necessary to:

a. Other parts of the training portfolio.
b. Workplace documents such as scans and reports.
c. These items should be commented on directly to demonstrate relevant knowledge or understanding. The trainee is expected to demonstrate in his/her own words an understanding of a process/task. Where protocols or procedures are included, they must be annotated with specific relevant comments to show knowledge/understanding or be used as part of the training assessment process. Any information included must be anonymised.
d. The HEI portfolio (where a formal educational course is being followed).
e. Any other relevant information.

The portfolio should have:

a. **A contents page** and be sectioned appropriately.

b. **A training plan**
The training plan generally indicates what is to be covered (high level learning outcomes) during the training and approximately at what point during the training this will be done. This should be reviewed regularly by both the trainee and supervisor and may be subject to some changes especially in relationship to the timing of training.

This is a key item in the application for registration on the IPEM training scheme.

The training plan should be referenced to the competency document. It may be appropriate to use the competency document to form the training plan by adding the expected timings to it.

c. **Reports**
There is a requirement to hold regular formal meetings (monthly) between the Training Supervisor and trainee. The IPEM Training Supervisor report form and a relevant DOPS should be completed. This should record what training was planned for the previous month confirming if this has been completed, partially completed or not started. Also, there is a section to list what training is to be done during the next month and how this is to be assessed. The important point is that the training highlighted in this report should be referenced to the training plan/competency document. The Moderator may request copies of the Training Supervisor report form / Supervisor DOPS to assess progress / support in training periodically.

d. **Certificates, record of attendance, awards etc.**
This is a section to keep any certificates, programmes of meetings attended etc. that are received during the training period.

There should also be a brief summary of the course and a review of how it applies, if at all, to the trainee and/or to the workplace they are in on a day-to-day basis. A good way of doing this would be through reflective practice and cross referencing it.

e. **A competency document**
This is the list of workplace training competencies which are to be signed off when completed. They should cover the whole range of activities undertaken identifying the various tasks expected to be performed. Where appropriate these can also be used to indicate the time when various stages of attainment in the competencies are reached, for example:

1. observes
2. assists
3. performs with supervision

4. performs with minimal supervision

The trainee should always be able to support their practice with underpinning knowledge at the appropriate level for the task and attainment stage they have reached.

It is suggested that a summary matrix may be created and used as a quick guide method of seeing what training has been completed and what training is outstanding.

f. **Evidence**

This is to support the knowledge and skills obtained through the competency training and educational knowledge delivered in the workplace. Some tasks will be undertaken in the workplace before the underpinning knowledge is delivered. Whoever is acting as trainer should provide sufficient underpinning knowledge so that the trainee is able to fully understand what is being done, why it is being done and how this knowledge may be used to appropriately adapt the current actions being followed to ensure a safe and acceptable outcome.

The evidence may include and take the form of:

- a brief statement of the overall task/competency being undertaken (i.e. what is the task/competency – may just be a reference e.g. Competency section 3 d (ii));
- an explanation of why it is being undertaken (e.g. medical referral, diagnosis, treatment, breakdown, routine check or PPM, legislative requirement etc.);
- a brief description of the task that is being undertaken (e.g. what is the starting point, what is the outcome that is expected to be achieved, etc., what equipment/accessories are used, what settings are selected and why, what protocols applied, what limits are applicable etc.);
- what difficulties/problems might be expected (clinical and technical) and why;
- who else is/might be involved;
- what equipment/other resources are needed/used etc.;
- examples of any measurements, e.g. measurements, scan report, etc., that were produced by the trainee as part of the activity. Remember, any directly recognisable patient data or other confidential data must be removed. The trainee should analyse and comment on any results obtained, explaining what they show/mean;
- notes of any underpinning knowledge delivered in the work place – underpinning knowledge delivered in the work place is given to:
  - supplement the knowledge delivered by the academic institution;
  - give additional or knowledge not covered by the academic institution e.g. expected results and how they may vary with different clinical conditions;
  - provide background because the academic course has not covered that particular area of knowledge at the point when it is required by the clinical placement.

Sensible use of reflective practice could also be a method of incorporating many of the above points and support/provide evidence within the portfolio.

It is not just the trainee's responsibility to provide evidence of training. The trainer and others may also provide evidence in the form of checklists, teaching notes, observational notes, reports etc. used in the training process. Training material from this route should be annotated to indicate the quality of the performance during practical sessions, response to discussions including questions and highlight if key factors were identified in the answer.

g. **A log of experience (Clinical Practice Document)**

This is a record of the workplace activity and identifies the actual workplace-based task, date when it is carried out, involvement and a reference to link to the appropriate competence. This is not the reflective practice however it may be appropriate, on occasions, to reference a particular task within the reflective practice especially where new work base experiences are taking place or where unusual outcomes are presenting. It is recommended that the log of experience is recorded as an activity based one rather than a purely chronological list.

h. **Case studies**

Case studies are required in all areas showing evidence of good scientific practice (See AHCS Good Scientific Practice document as a benchmark). Where the Scope of Practice has minimal links to direct patient pathways it is expected that the report would reflect on how a patient and the patient pathway may be impacted.

Two case studies are required and each one would normally account for 10-20 hours. In addition, each case study requires a minimum word count of 3,000.

Case studies are detailed, in-depth accounts or investigations of a particular activity, event or problem relating to the clinical technologist's scope of practice. Case studies:

- Are based on real life events
- Are derived from multiple sources of information
- Have a clinical technology context
- Are patient focused
- Explain the associated clinical technology
- Detail underlying scientific or engineering principles
- Refer to relevant legislation, standards and guidelines
- Demonstrate risk management and quality management aspects
- Include a conclusion and a review of impact on patient care

Trainees discuss their case studies with moderators at all stages ensuring their case studies are properly planned and utilise appropriate study methods. Case studies may include the acquisition and use of data and the interpretation of results. Where good cross referencing is used, case studies can be used to provide evidence for multiple competency elements of the training.

Please note, case studies may be used to provide evidence for one or more competency elements of the training. If this is the case good cross referencing must be used.

i. **Reflective practice**

There is no restriction on what might be reflected upon. The trainee must consider what activity they performed and why, what went well, what could have been performed better and if any improvements (personal or service) could be made.

When things are new there may be a lot to reflect on but, when a process has been repeated a number of times, the trainee may choose to reflect more deeply than they were able to do previously and/or only reflect on unusual or interesting events. Where appropriate, the reflective practice should be cross-referenced to the training objective within the competency document and/or to additional evidence etc.

It is strongly suggested that the reflection record should be filed by topic and then chronologically so as to make it easier to refer back to and see progress. Please see Appendix 1: Reflective Practice Template

Appendix

The portfolio must not contain material that does not directly evidence the trainee's training.

4.4 Adherence to Professional Code of Practice

The IPEM Dip T award affords an application to join the Register of Clinical Technologists. The RCT's Fitness to Practice Procedure / Code of Professional Conduct are closely aligned with HCPC processes. When a candidate is considered to have breached this procedure or code e.g. a breach of patient confidentiality has been identified, the CT Training Scheme Lead, Chief Moderator and IPEM Head of Workforce and Training will convene to discuss the particulars of the case. As a matter of course the candidate's employer will be informed, and the Training Centre will be asked to investigate the matter. The expectation being the center will put into place robust local procedures to ensure the breach is not repeated. Depending upon the level of disclosure, sanctions will be imposed on the candidate ranging from: a limitation of the final mark to pass, suspension from the scheme, where the applicant may then resubmit in the following exam period with a limitation of their mark to a pass, to permanent expulsion from the scheme.

4.5 Practical Skills Training

It is important that good practice is the cornerstone of the practical skills training.

It is essential that no step in the skill being taught is missed so the use of checklists, procedures and protocols, etc., is essential. It goes without saying that these must be current and encompass current regulations and legislation.

The normal training processes of observation followed by varying degrees of supervision is recommended but please always consider patient critical procedures carefully and, where appropriate, use setups specifically created for training purposes.

There are a number of ways to demonstrate practical skills progress and achievement including test results, photographs, video clips, checklists annotated by observer or trainee and reports. Planning will ensure that this evidence can be collected during the training process **and included in the portfolio** along with any additional knowledge, analysis and reflective practice etc., relating to the competency.

5. The Assessment Process

5.1 The Four Assessment Parts

For the IPEM Training Scheme:
1. Theoretical (academic) knowledge
2. Portfolio (understanding)
3. Practical (clinical/technical practice) training
4. A viva – an oral based assessment in order to demonstrate a clear link between the underpinning knowledge and the practical applications undertaken

5.2 The Three Assessments Periods

1. Before training begins – to establish what if any training is required
2. During training – to monitor progress of the training
3. At the end – to confirm the training outcome

5.3 Who Carries Out the Assessment?

In the workplace:

The trainer or suitable person – this may be the Training Supervisor, Training Coordinator or another trainer not involved in the training delivery.

They will continually assess:
- the portfolio
- direct observation of procedural skills (DOPS)

Each competency is assessed as part of the work-based assessments. Assessments are marked using the DOPS template in accordance with the marking scheme criteria in this handbook.

External:

The External Moderator is appointed by IPEM and attends once per year to review the training.

They will:
- confirm receipt of any award for educational attainment
- review the APEL evidence
- review the portfolio
- observe an element practice being performed
- hold case-based discussions during the assessment process
- give advice and guidance on the training
- complete a moderator visit report and Moderator DOPS form, for inclusion in the trainee's portfolio and review by the Chief Moderator

Please note the DOPS mark given on the first visit is for indication only; it is not included in the trainees final mark, but helps manage the trainee and supervisors expectations of the assessment process. The Moderator DOPS performed at the second visit accounts for two thirds of the practical mark, while the average of the Supervisors mark – providing they are adequate in both scope and quality – accounts for one third.

The Moderator may be asked to participate in the final viva held centrally, usually at IPEM, York.

All assessments should be marked according to the marking scheme scoring criteria in this handbook.

The assessment scores given in the workplace will have a significant influence in determining the overall assessment outcome. The importance of all the assessment must not be underestimated which is why all assessments should be documented and a rationale of the scoring recorded. Any checklists, key points, questions and answers etc. should be kept and available for review.

5.4 Theoretical Knowledge

There may be an existing formal marking scheme in place for assessing the educational knowledge that has been delivered. If there is no existing marking scheme already in place then any assessment should be scored by the person carrying out the assessment according to the marking scheme scoring criteria in this handbook. Regardless of the training pathway the theoretical knowledge should be assessed as follows:

Before training begins:

A training review will be held to determine what, if any, theoretical underpinning knowledge is required and to determine how it is to be delivered, i.e. through a formal HEI based course or an in-house training programme.

During training:

If formal educational training is delivered through a HEI the educational provider will organise and assess the trainee's progress either throughout the course or through an end examination. It is the responsibility of the workplace to keep IPEM informed of progress on such courses.

If delivery is formally delivered through the workplace then assessment should also be from any interim exams/tests and/or reviews of completed assignments or other methods deemed appropriate. IPEM should receive feedback on the progress of the training through the Training Coordinator/Supervisor.

Evidence of knowledge delivered informally whilst developing the competency would be expected to be included as part of the supporting evidence for the competency in the portfolio. It is unlikely that this can be assessed adequately against an educational level award.

It is important to remember that, if the trainee does not have a level 6 educational qualification, the knowledge delivered would need to be clearly demonstrated as being at level 6 or above.

After completion:

Successfully completing this training may be assessed by a final examination or other appropriate means. The final assessment should lead to either a formal award by a HEI provider or, where possible, a local award for any course delivered internally.

5.5 Portfolio Assessment (Understanding)

Any assessment should be scored by the person carrying out the assessment according to the marking scheme scoring criteria.

Accuracy of information:

The portfolio should be factually accurate. Incorrect information should be noted and may be revisited during the viva examination in order to elicit any underlying conceptual problems (feedback provided to the central viva team).

Numerical information should be presented in a scientific manner with due consideration of numerical accuracy and error handling. Similarly, graphical information should be correctly presented again with suitable use of error handling.

Consideration should be given to the use of language to ensure that the trainee uses the correct terminology. Weak trainees often misuse, or exchange, physical quantities indicating a lack of basic understanding.

Portfolio size:

The overall size of the portfolio may not be a good indicator of the trainee's ability. It is better to have a smaller quantity of well written documentary evidence than vast amounts of poorly structured evidence or photocopied protocols and technical reports. All data included within the portfolio should add value and be commented upon appropriately. Weaker trainees frequently include large amounts of test reports, protocols, etc., often with no more than a cursory comment on them in the text. Where this occurs, it should be commented upon.

The size of the portfolio should be sufficient for the examiner to gain an overall impression as to competency of the trainee. Where the examiner finds that insufficient information is presented then this needs to be documented in the examiner's report.

Before training:

A review of evidence of training for the purposes of APEL.

During training:

Ideally each competency element should be assessed as they are completed however; the Training Supervisor may complete a final assessment at the recommendation of another trainer.

The External Moderator would normally make a snapshot assessment of the portfolio on their visit to ascertain if the training is progressing appropriately and successfully. The use of an electronic portfolio may mean more and earlier assessments can be undertaken by the moderator via email of a single PDF.

After the training:

The electronic portfolio will be reviewed and marked according to the marking scheme as part of a full final assessment process by the External Moderator and Supporting Moderator. They will determine a final score taking into account the additional scoring from the workplace. This would normally take place at least 6 weeks prior to the final viva. Should the portfolio achieve a score of 40% or less, this will be considered a fail and the trainee will be removed from the upcoming viva session and entered into the next available session. The final mark will be restricted to a pass, providing that the portfolio, practical assessment and viva subsequently meet all the requirements for a pass.

5.6 Assessment of Practical Training

Any assessment should be scored by the person carrying out the assessment according to the marking scheme scoring criteria. It is essential a log of DOPS is prepared for the External Moderator.

Before training:

As part of the training review the practical training should be assessed to determine if anything may be Accredited to Prior Experiential Learning (APEL). The rationale on why APEL has been awarded must be fully documented.

During training:

The Training Supervisor and trainers will monitor progress continually throughout the training programme. Formal meetings will be held at least once a month to review training. A record of these meeting must be included in the training portfolio.

A judgement of practical ability will be based on practical assessments made through Direct Observation of Practical skills (DOPS). Where appropriate the trainee will talk through the practical skills they are performing, comparing and contrasting their outcomes with their expected outcomes. The External Moderator may observe a trainee perform a practical task or examine evidence relating to practical skills. They may also take the opportunity to have a case-based discussion about one or more areas of work and the skills needed to perform in order to test the trainee's true understanding. As always, the assessment should be documented, and a rationale of the outcome recorded. Checklists and key points are especially recommended for both training and assessment.

It is anticipated that all practical observations will be completed at least 12 weeks prior to a final assessment.

The External Moderator and Training Supervisor will review their DOPS logs and award a final mark and their justification for doing so.

After training:

Any assessments on practical skills will normally be completed during the training period. It is possible however that on some occasions there will be a formal practical assessment at the end of the training as part of the final assessment. If this is going to be the case the trainee will be given adequate warning.

5.7 Viva and Case Based Discussions

Case based discussions can be part of an ongoing assessment during the training process.

During this type of assessment trainees should be asked a number of task specific questions and these should be phrased in a manner designed to draw information on the trainee's overall understanding rather than a straightforward yes/no response (see **Viva Examination Principles**).

The External Moderator and Training Supervisor will ensure that the portfolio and practice have been successfully completed and signed off before the viva date.

Final vivas will now normally be held at a central point no more than two times per year: May and November. The final assessment date will have been allocated on enrolment. Should a trainee defer this date (other than for exceptional circumstances), a penalty will be applied – maximum of a PASS. An additional fee may also be applied. If a trainee wishes to defer their viva, they must complete a Deferral of Assessment request and submit this to IPEM for approval. This must be supported by their Training Supervisor, Head of Department and External Moderator. The deferral will be considered by the IPEM CT Training Scheme Lead, the Chief Moderator and the appropriate Registrar (the 'Deferral Panel'). If the deferral is granted, the Deferral Panel will determine whether exceptional circumstances exist which will allow no penalties to be applied to the deferral. If no

exceptional circumstances exist, a penalty of a maximum of a Pass at viva will be applied. If a trainee who has deferred fails their subsequent viva, there will be no option to re-sit.

Moderators will be invited to participate and will usually, but not exclusively, be drawn from the moderators whose trainees are not having their final viva.

The IPEM office will coordinate the arrangements for the viva. The location of the viva will be determined by the most convenient location for moderators and trainees. If no obvious location is identified the location will be at IPEM in York. The expenses for moderators will be paid as normal; however, the trainee's expenses will be their responsibility.

It is still possible for individual final assessments to be arranged but the hope is that centralisation will reduce the workload and improve the assurance of consistency as well as providing a focus for the training to be completed.

6. Post Training

6.1 Continuing Professional Development (CPD) Maintenance

CPD is a process used to help the Clinical Technologist achieve a deeper understanding of their chosen specialised area and to be able to demonstrate progress in their profession.

CPD requires the maintenance of a record of evidence.

Following a system of CPD is a requirement for all those on the RCT or other registers such as IEng or RSci.

It is hoped and anticipated that Clinical Technologists would wish to use the IPEM CPD scheme, details of which are available on the website or call the IPEM office for details.

6.2 Requirements of the Engineering Council and Science Council

IPEM is licensed by the Engineering Council to assess applicants for registration as Engineering Technician (EngTech), Incorporated Engineer (IEng) or Chartered Engineer (CEng). The assessment of education and professional development is made against the standards set out in UK-SPEC.

Those interested in becoming registered as EngTech, IEng or CEng may obtain general information from the Engineering Council or specific information from IPEM.

The website for the Engineering Council can be found at http://www.engc.org.uk

IPEM is licensed by the Science Council to assess applicants for registration as a Science Technician (RSciTech), Registered Scientist (RSci) or Chartered Scientist (CSci). The assessment of education and professional development is made against the standards set out by the Science Council. Contact the IPEM office for details.

7. Guidance Notes

7.1 Guidance Notes for Training Coordinators

These notes provide Training Coordinators with a description of their duties and responsibilities to implement the Clinical Technologist's Training Scheme in the Training Centre under their supervision. A full description of the scheme is given in the current prospectus.

Duties of the Training Coordinator:

- **Ensuring that the department or consortium is accredited as a Training Centre by IPEM. Application forms are available from the IPEM Office or the IPEM website.**
- Participating in any Accreditation of Prior Experiential Learning as appropriate.
- Where appropriate participating in the training review and the development of an appropriate training plan.
- **Ensuring that the trainee applies for registration on the training scheme.**
- **Assisting the trainee to complete the Training Scheme application form.**
- **Ensuring that the trainee is registered on an appropriate course or already holds an appropriate qualification.**
- **Providing guidance to the trainee on the areas of training.**
- **Ensuring that the annual registration fee is paid.**
- **Being the local contact point for the Training Scheme.**
- **Ensuring that an appropriate Training Supervisor has been appointed.**
- **Ensuring there is a timetable of training in place and that the trainee attains the core competencies as detailed in the prospectus.**
- **Ensuring that arrangements are made for the trainee to participate in informal short-term acquaintanceship placements in other areas of medical physics, biomedical engineering or physiological measurement.**
- **Acting as mentor for the trainee to overcome problems which may arise as part of the training programme.**
- **Meeting with the trainee and Training Supervisor every six months and ensuring that the Training Supervisor's review forms have been completed.**
- Liaising with the External Moderator and ensuring that meetings between the External Moderator, the Training Supervisor and trainees are arranged as necessary.
- Arranging, where applicable, the local end-point assessment examination.
- Providing copies of the External Moderators reports to the Training Supervisor and trainee.
- Receiving, where applicable, comments from the Chief Moderator and advising the trainee on areas for further work in the event of failure by the trainee at the end-point examination.
- Informing IPEM of any changes in circumstances regarding the trainee, e.g., resignation from the department.

7.2 Guidance Notes for Training Supervisors

These notes provide Training Supervisors with a description of their duties necessary to implement the basic Training Scheme in the area under their supervision. A full description of the scheme is given in the current prospectus.

Duties of the Training Supervisor:

- Maintain competence as a training supervisor by routinely attending the IPEM training days.
- Participating in any Accreditation of Prior Experiential Learning as appropriate.
- Where appropriate participating in the training review and the development of an appropriate training plan.
- Ensuring that the trainee is engaged primarily in work in the main subject area.
- Responsibility for the development of the trainee during their work-based learning period.

- If necessary, providing knowledge-based training to support practical work.
- Managing, overseeing and directing the teaching of the trainee's work-based training.
- Ensuring that the trainee has the opportunity to achieve the competence levels.
- Holding regular meetings (ideally monthly) with the trainee to review progress during the training and completing the Training Supervisor's review form or equivalent.
- Performing and documenting Direct Observation of Practical Skills assessments or ensuring that any appointed trainers do this task.
- Signing off practical competencies as they are achieved or ensuring that any appointed trainers do this task.
- Ensuring that the trainee keeps appropriate notes and records during the training and produces a representative portfolio covering the attachment by the due date.
- Meeting with the trainee and Training Coordinator at the specified periods during the training.
- Meeting with the External Moderator at their visits to discuss the provision of training within the Centre and the trainee's progress.
- Ensuring the Training Supervisor's review forms are available for review by the External Moderator.
- Providing a six-month Training Supervisor's report for the External Moderator.
- Advising the External Moderator of the workplace scoring of the portfolio.
- Providing the External Moderator with a DOPS log that will form part of the overall score for the practical assessments.

7.3 Guidance Notes for External and Supporting Moderators

This document indicates guidance for moderators undertaking practical assessments and portfolio marking for the Institute of Physics and Engineering in Medicine (IPEM) Training Scheme.

Duties of the External Moderator:

- Maintain competence as an IPEM moderator by routinely attending the IPEM training days.
- Liaising with the Training Centre through the Training Coordinator and/or the Training Supervisor.
- Visiting the trainee at least once per year.
- Ensuring the department is providing adequate training support to the trainee.
- Confirming trainees' academic qualifications and competency lists are consistent with IPEM requirements.
- Reviewing the APEL evidence.
- Providing guidance and advice on the training or the training process.
- Reviewing the training progress.
- Participating in case-based discussions during the training period to assess understanding.
- Carrying out DOPS and coordinate with the Training Supervisor to ensure a DOPS log is accumulating.
- Completing the External Moderator visit reports and returning them to the Chief Moderator.
- Reviewing and assessing the training portfolio according to the marking scheme.
- Liaising and consulting with the Supporting Moderator and Training Supervisor over the portfolio score.
- Liaising with the Training Supervisor over a suitable assessment score for the practical skills.
- Providing documentary evidence of assessments performed. Sufficient records of the assessment should be made in order to support any decisions. The notes should be submitted together with any relevant comments to IPEM to support any final marking.
- Making recommendations to IPEM CT Training Scheme Lead on the outcome of the training.
- Participating in the final viva process when required.
- Assist in the development of newly appointed moderators.

Duties of the Supporting Moderator:

- Providing an independent assessment of the portfolio.
- Performing practical assessments if required.
- Supporting the External Moderator with advice and guidance when required.

- Participating in the final viva process when required.

8. Marking Scheme

Poor	Unsatisfactory	Adequate	Good	Excellent
1-20	21-40	41-60	61-80	81-100
Totally inadequate demonstration of knowledge. Not able to link theory and practice. No appropriate themes identified.	Limited evidence of knowledge. Inappropriate links between theory and practice. Unsatisfactory reference to key themes.	Mostly accurate knowledge with satisfactory depth and breadth of knowledge. Sound integration of theory and practice with fair identification of key themes.	Comprehensive knowledge demonstrating very good depth. Clear sight into links between theory and practice. Demonstrates ability to transfer knowledge between different contexts appropriately.	Outstanding knowledge. Theory is linked to practice to an exceptional level and may be used to formulate new questions, ideas and challenges.

The marking scheme should be applied in every aspect of the training except the formal assessment of knowledge as the provider should have their own marking scheme.

It is important to remember when scoring that the basic expected information would only score a maximum of 60 marks and that in order to gain more marks the trainee would need to demonstrate knowledge and understanding in line with the descriptions above for good and excellent. See Marking Scheme Guidance overleaf.

In cases of performing a practical task the reasons for attaining a higher level may be shown in above average dexterity, attention to detail, organisational skills as well as their interaction and ability to communicate with patients, carers and other staff. Other factors may be decisiveness, clear understanding of their limitations, ability to interpret and acting upon results etc.

The trainers should score the portfolio content on an ongoing basis.

The portfolios are assessed and scored independently by the External Moderator and the Supporting Moderator 6 weeks prior to viva.

Each section within the portfolio is allocated a score from 0-100. A weighting factor will then be applied to the scoring sections of the portfolio. The final score is then adjusted to a maximum of 40.

Marking Scheme Guidance

Poor	Unsatisfactory	Adequate	Good	Excellent
Evidence does not provide sufficient theoretical information or detail to support the competency. Undertakes the practical in an unsafe manner requiring intervention at some level – auto FAIL Undertakes the practical in a safe manner with a large amount of prompting. Unable to answer questions when prompted.	Evidence provides insufficient theoretical information or detail to support the competency. Undertakes the practical in a safe manner with a large amount of prompting. Able to answer few questions when prompted.	40-50 minimal evidence provided to support competency. Mostly accurate (borderline pass to be ratified by the IPEM CT Training Scheme Lead, the Chief Moderator and the appropriate Registrar – the 'Ratification Panel') Undertakes the practical in a safe manner with some prompting. Answers some questions raised with prompting. 51-59 as below PASS Undertakes the practical in a safe manner with little prompting. Answers some questions raised during assessment.	The individual has PASSED but now provides additional detail, examples, further developments etc. Undertakes the practical in a safe manner with little prompting. Provides additional detail e.g. alternative methods, details of any equipment used, H&S, ideas for improving that task. Is able to answer questions as appropriate.	
1 - 20	21 – 40	41 – 60	61 – 80	81 - 100
Totally inadequate demonstration of knowledge. Not able to link theory and practice. No appropriate themes identified.	Limited evidence of knowledge. Inappropriate links between theory and practice. Unsatisfactory reference to key themes.	Mostly accurate knowledge with satisfactory depth and breadth of knowledge. Sound integration of theory and practice with fair identification of key themes.	Comprehensive knowledge demonstrating very good depth. Clear sight into links between theory and practice. Demonstrates ability to transfer knowledge between different contexts appropriately.	Outstanding knowledge. Theory is linked to practice to an exceptional level and may be used to formulate new questions, ideas and challenges.

8.1 Final Mark:

The final mark is made up accordingly:

Practical work following assessment visits (External Moderator)	**– Maximum 40**
Portfolio	**– Maximum 40**
Viva	**– Maximum 20**

Pass

A score of 50% or more is required **in each** of the portfolio, viva or practical Assessments.

80%	Distinction
65%	Merit
50%	Pass

Borderline Pass

A borderline pass is when a score of 41-49% in either the portfolio, practical or viva is achieved with scores of 50% or more in the remaining two modules. The overall average mark must be 50% or more.

Note: In this case the maximum attainable grade will be a Pass.

When a borderline mark is achieved the final assessment documentation is reviewed by the IPEM CT Training Scheme Lead, the Chief Moderator and the appropriate Registrar (the 'Ratification Panel').

Fail

A failure will be recorded when:

- A score of 40% or less for the portfolio, the viva or the practical assessment. If the portfolio scores less than 40%, this will result in the trainee being removed from the planned viva session and entered into the next session. If the viva or practical assessment scores below 40%, a resubmission of the module will be required. The final mark will be restricted to a pass;
  or
- A score of 41-49 is obtained in any two modules (portfolio, practical or viva).

The External Moderator shall complete the record of final assessment with sufficient information as to the basis of the mark awarded. The trainees should not be given their results as they must be ratified by the IPEM CT Training Scheme Lead, the Chief Moderator and the appropriate Registrar (the 'Ratification Panel') who will inform the trainees and Training Centre appropriately.

Trainees will normally be informed of their results within 3 weeks following viva.

8.2 Portfolio Marking Template:

All of the sections identified below should be included within the portfolio. Omission of a scoring section will result in an unsuccessful submission. A weighting factor has been applied to the sections that are to be scored. *Moderators should use the template in Appendix 6 Portfolio Marking Template*

Topic	Weighting of overall Score	Comments from External /Supporting Moderators
General presentation and organisation of the Portfolio including a contents page	5%	This is about straight presentation and feel. How easy is it to read, are there references and cross references which make it easy to follow?
Training Plan – objectives with approximate timing, method of deliver and assessment		*Will not be scored directly but will be taken into account when assessing the final mark.*
List of competencies to be signed and dated when accessed and the outcome achieved (i.e. successful, unsuccessful)		*The list of competencies will not be directly scored but the amount of competencies undertaken and successfully attained will be taken when agreeing a final score*
Evidence to support competencies – cross referenced to competency list. ○ Underpinning knowledge (**theory**) 15% ○ Overall explanation, description and detail of what is actually involved in the competency (**skills knowledge**) 15% ○ Examples of work undertaken, including data, results, sample protocols and sample reports (**all require trainee input /explanation not just copies of documentation**) 15%		*A judgement is made on whether enough underpinning knowledge is included to make sense of the competency being undertaken and give a reasonable score for the evidence provided. Basic achievement should receive up to 59% of the marks. Additional marks should only be given for additional information that is over and above the basic information. (see portfolio marking scheme)*
Reports from conferences, courses or placements		*The reports will be assessed as part of reflective practice. Since the Trainee has no control over the conferences or courses, they are able to attend this will not be scored directly*
Case Study 1	12.5%	Case studies can double up as evidence so can be scored within both sections.
Case Study 2	12.5%	

Log of Experience	5%	
Reflective Practice	20%	Reflective practice can double up as evidence so can be scored within both sections. True reflective practice demonstrates a progression of thought and understanding which relates the breadth and particularly the depth of understanding and the practical aspects associated. The breadth should open up the thoughts to wider possibilities e.g. may refer to the wider patient impact such as, social/psychological effects or to the potential to use/apply new technologies or to the working processes (service delivery). The reasoning aspect could also be considered in the marking of the practical competency if Reflective Practice is cross referenced to the evidence.
Supervisors report – evidence of regular meetings and assessments		*Will not be scored directly but will be taken into account when assessing the final mark.*
External Moderators reports		*Will not be scored directly but will be taken into account when assessing the final mark.*
Total Score		
Average portfolio score awarded by the final assessment panel (maximum 40)		

9. Viva Examination Principles

9.1 Introduction

The vivas will normally be in York although this may vary depending on the location of the trainees and examiners and moderators. The viva will be structured, and a selection of questions agreed (weighted to reflect the level of difficulty or complexity) prior to the viva. External Moderators are given the opportunity to submit questions specific to a trainee's portfolio where concerns have been raised.

The questions to be asked should be written down and the viva panel should have a copy together with the key points that are required as part of the answer. Each panel member should score the questions independently during the viva. A brief summary of the trainee's answers will be recorded. During the examination it may be necessary to deviate from the scheduled questions if the responses from the trainee are not adequate.

The viva panel should keep sufficient records relating to the viva examination as to support their allocated mark. This may be used for trainee 'feedback'.

9.2 Process

Panel members will try to make the trainee feel at ease. It is useful to provide paper and pens in order to assist with some answers. The questions should start easy and general in nature concentrating down on more specifics as the examination progresses.

The panel should approach any portfolio errors in a way which allows the trainee to demonstrate their abilities not their failings. Hence, statements such as 'what is wrong with this section', or 'I think that there is a mistake here', are to be avoided.

Care should be taken over body language and tone of questioning. Adoption of an aggressive body position should be avoided (leaning across the table/pointing). Instead, a relaxed body position is encouraged (sitting comfortably upright/arm resting on the table). It is generally helpful to lean forwards slightly when offering the trainee some assistance.

Open/closed, wide/narrow questions

The moderators should, wherever possible, use questions which are designed to draw information from the trainee (i.e. open questions). It is good examination technique to build questions one on another leading the trainee slowly into areas of increasing difficulty.

The difference between open and closed questions is often one of phraseology. Also the starting point for the question needs to be well chosen. It is better to start wide and gradually close down to a specific point.

The moderators should avoid over-concentration on a specific, narrow area.

9.3 Assistance

The panel should offer some guidance to the trainee should they struggle to answer. It could be that they have not correctly interpreted the question so the initial action by the moderator should be to assess whether the question is understood. If the trainee continues to struggle the panel should move quickly on to another topic. Any trainee who thinks their way through a question should be congratulated (an occasional 'good' works wonders for morale). Similarly, the panel needs to move smoothly and

comfortably on to another subject area when a trainee continues to struggle whilst keeping the trainee at their ease (e.g., 'that is an area that a number of trainees have difficulties with – let us move on to a different topic'). The level of assistance given should be noted and be taken into account when allocating marks. Trainees who require prompting cannot attain full marks for a question. Whereas trainees who are go beyond the question, demonstrating outstanding knowledge linked to the practice e.g. state of the art may be awarded additional marks.

9.4 Listening Skills

The panel must demonstrate skills not only in asking questions but also in listening to the answers given. These answers will contain clues as to the abilities of the trainee, their state of nervousness, etc. The answers themselves may lead to follow-on questions.

The panel needs to differentiate between a good answer and a good guess possibly by a follow-up question. A trainee who states that they do not know something but is prepared to try to work their way through it is to be encouraged.

The panel needs to assess the technical abilities of the trainee.

9.5 Interview Length

The interview should be only as long as is needed to satisfy the panel as to the level of the trainee. More time should be taken for borderline trainees who are between pass/fail in order to differentiate between a pass and a failure. Similarly, more time should be given to an exceptional trainee who may well be awarded a merit or distinction.

Otherwise, once a trainee has demonstrated sufficient competency to pass, the viva can be drawn to a conclusion.

9.6 Basis of Questions

A viva paper with indicative questions, answers and marks will be supplied. These are based upon the competencies and Scope of Practice and are updated annually. Wider questions may be asked to determine the degree of competencies covered or to demonstrate the wider reading of the trainee. The panel need to be satisfied that the trainee has a good understanding of the fundamentals of most of the practical or clinical work and theory, perhaps highlighting any areas that the trainee shows poor understanding. The panel must be satisfied that the trainee is safe to practice in the chosen field.

9.7 Examination Performance

Each question should have a written copy of the key points that would be included in a model answer. This can then be compared to the trainee's answer and the marking scheme (section 3.5) to enable an individual assessment of each question.

Each panel member should mark independently with their average being the final viva score. They should keep sufficient records relating to the viva examination so as to support their allocated mark. The results will be transferred to the Results of Trainee Final Assessment form and passed to the IPEM CT Training Scheme Lead, the Chief Moderator and the appropriate Registrar (the 'Ratification Panel') for ratification.

The outcome of the viva will not purely be based on the number of questions answered correctly. If the

trainee demonstrates a lack of knowledge in an area that is fundamental to the Scope of Practice such that the trainee's fitness to practise is brought into question, then the panel must fail the trainee.

10. Process for Dealing with an Unsuccessful Outcome to a Final Assessment

Portfolio

Whilst it is hoped that portfolios not reaching an acceptable standard will be avoided by the intervention of the Training Supervisor and the External Moderator during the training period, the following process should be followed if a portfolio is judged to be not up to an acceptable standard.

- The examiners (usually the External Moderator and the Supporting Moderator) should collate all notes and evidence in support of the decision.
- The evidence and the training portfolio should be forwarded to the Chief Moderator with a period no longer than one week.
- The Chief Moderator will review the evidence taking advice where necessary. As a result the Chief Moderator will either support the original decision or, after discussions with the original examiners, overrule it. This process should be complete within six weeks. At the beginning of this process the Chief Moderator will inform the IPEM office which, using a standard template letter, will inform the trainee and Training Centre of the process that is being followed.
- If the standard of the portfolio is adjudged not to be acceptable then the Chief Moderator will inform the IPEM office who will circulate the portfolio marking template to the IPEM Clinical Technologist Lead and appropriate Registrar for agreement.
- TIMESCALE 7 DAYS
- The trainee will be advised of the ratified outcome via the standard proforma letter signed by the IPEM CT Training Scheme Lead and sent by the IPEM office. This should explain the result and, within context, the reasons for the failure. The letter should also advise the trainee of the next steps to either appeal or resubmit.

For Practical Competencies

- Where the performance of practical competency does not reach the required standard, the examiners (usually the External Moderator and the Supporting Moderator) collate all notes and evidence in preparation for feedback to the trainee and the Training Supervisor and send to the IPEM office.
- TIMESCALE IMMEDIATE
- Information from the examiners will be collated by the IPEM office on to a standard proforma.
- TIMESCALE 7 DAYS FROM RECEIPT
- The IPEM office will circulate the now completed standard failure proforma to the IPEM Clinical Technologist Training Scheme Lead and appropriate Registrar for agreement.
- TIMESCALE 7 DAYS
- The trainee will be advised of the ratified outcome via the standard proforma letter signed by the IPEM CT Training Scheme Lead and sent by the IPEM office. This should explain the result and, within context, the reasons for the failure. The letter should also advise the trainee of the next steps to either appeal or resit.

Viva

- The examiners (usually the External Moderator and the Supporting Moderator) collate all notes and evidence in preparation for feedback to the trainee and the Training Supervisor and send to the IPEM office (the trainee is not informed at the time of the viva).
- TIMESCALE IMMEDIATE
- Information from the examiners will be collated by the IPEM office on to a standard proforma.
- TIMESCALE 7 DAYS FROM RECEIPT
- The IPEM office will circulate the now completed standard failure proforma to the IPEM Clinical Technologist Training Scheme Lead and appropriate Registrar for agreement.
- TIMESCALE 7 DAYS.
- The trainee will be advised of the ratified outcome via the standard proforma letter signed by the IPEM CT Training Scheme Lead and sent by the IPEM office. This should explain the result and, within context, the reasons for the failure. The letter should also advise the trainee of the next steps to either appeal or resit.

Appendix 1: Reflective Practice Template

Reflective Practice
(learning from doing)

Date/s
Detail of a recent experience in your professional life
What did you do?
Why did you do it?
What went well?
What could have been done better and how?
Has anything been changed or improved as a result of the experience

Appendix 2: Reflective Practice Guidance

Reflective Practice Guidance
Clinical Technologist Training Scheme

Introduction
Reflective practice will be of most use to you if it is kept regularly, at a time that fits in easily to your life and is in a format that makes sense to you.

Reflective practice is simply analysing something you have done or have been involved with. This may be a single task, or one gained over a period of time. The purpose of reflective practice is to look back at an experience after a little time has elapsed, to analyse it, evaluate it, and to see if the experience could be made better. It may be the experience cannot be improved; in which case you are confirming best practice through reflective practice.

Reflective practice could be applied to every task that is performed, and on some occasions, this may be the right thing to do, however; repeatedly documenting the same thing over and over again without any changes in outcome is of little benefit or purpose. Reflecting on minor changes or potential changes in practice may prove useful e.g. lady for bone scan was particularly nervous, so it may have been beneficial to give an explanation of what was going to happen before entering the treatment room.

Reflective practice is a personal document so there is no right or wrong way to keep it. The reflective practice documentation should be cross-referenced within the portfolio to the competency, the' log of experience' (logbook) entry and any other appropriate documentation. A form has been provided and guidelines to use the form are set out below. The response to the questions on the form should be focussed and to the point and may range from a one-word answer to a more detailed explanation requiring extra paper.

Detail of a Recent Experience in your professional life

This is just asking what you are going to be reflecting on.

For example, it may be based on one or more of the following

- **a practical or hands on task**
  e.g. a bone scan, making an appointment, constructing a circuit board, measuring an output etc.
- **a learning experience**
  e.g. attending a lecture/meeting, reading an article, paper or lecture note, surfing the internet etc.
- **communications and professional relationships**
  this may be with a work colleague, a patient, a manufacturer etc.

What did you do?

It is a description of your role in the in the actual experience and could be very specific.

Examples.

- attended a meeting.

- performed the QA check on an RA33 blood analyser following departmental protocol 33.
- gave the initial explanation of the process to the patient, and assisted in the scan
- observed the EMC measurements being taken.
- assisted in the maintenance of the bone densitometer.
- modified patient immobilisation mask.
- set the bias level voltage on circuit board B of the RM impedance analyser, by adjusting components VR33 and VR34.

Why did you do it?

This could be very specific.

Examples

- my specific area of interest and work is in the measurement of vital signs within the trauma environment.
- as part of my induction and training programme.
- to ensure the equipment works within the specification.
- to provide the scanning images required for clinical diagnosis.
- Performing PPM part of my day-to-day equipment management duties.

What went well?

Don't be modest, be realistic. Analyse and evaluate what you did.

- The knowledge, skills and qualities you used?
- The problems you tackled successfully.
- Quality of the results obtained.
- Ability to adapt and use the resources available.

What could have been done better and how?

Don't be afraid to admit difficulties and shortcomings you encountered or felt, as this is the only way you can truly plan to improve. Be realistic and analyse and evaluate the decisions you took, and the actions taken.

Examples

- I could have explained the procedure more clearly in order to put the patient at ease.
- I did not understand well enough what I was supposed to be doing, and therefore felt under pressure and unable to be sure I was carrying out the task correctly. Require updating/training.
- PCB tracks so close it proved difficult to etch. Increase distances between tracks, and renew the chemicals used more often to improve outcome.
- Unable to access all the equipment needed, better forward planning required.
- Patient was difficult to manage due to their condition. An extra pair of hands is needed in similar situations and a modification to the referral form is required to ensure all the relevant information is included.

Has anything been changed or improved as a result of the experience?

Examples

- No
- A simple procedure explanation card has been produced. Patients are given the card to read in the waiting area prior to being called for their scan. The Technologist explains the procedure to the patient when they enter the scanning room and any queries are answered.
- Training seminar was held.
- Standard recommended distances for distances between tracks has now been circulated to all staff involved in the production of PCB's.
- Equipment availability is now checked 2 days prior to the maintenance and calibration procedures.
- Modified referral form has been created and is now in use.

Further guidance on Reflective Practice can be found on the IPEM website, Members' area in the Training Resources section.

Appendix 3: Supervisor Direct Observation of Practical Skills (DOPS)

Clinical Technologist Training Scheme

Supervisor Direct Observation of Practical Skills (DOPS)

Please supply these documents to the External Moderator at each visit

Trainee Name:	
Training Centre:	
Location of Assessment:	
Date of Assessment:	
Description of Event/Procedure:	
Competency References:	
Assessor Name:	

Aspect of Procedure	**Assessment (delete as appropriate)**	
History Taking / Preparation Does the trainee obtain relevant information prior to undertaking procedure? Has the trainee read relevant SOP's and any other relevant documentation?	**Poor / Unsatisfactory / Adequate / Good / Excellent / Unable to Comment** **1 - 2 / 3 – 4 / 5 – 6 / 7 - 8 / 9 - 10** **Notes:**	/10
Communication Does trainee use language and terminology appropriate to the situation (with patients, other clinical staff and with colleagues)?	**Poor / Unsatisfactory / Adequate / Good / Excellent / Unable to Comment** **1 - 2 / 3 – 4 / 5 – 6 / 7 - 8 / 9 - 10** **Notes:**	/10

Understanding Does trainee display understanding of the procedure and the expected outcomes? Does the trainee understand the principles and basic science underpinning the procedure?	**Poor / Unsatisfactory / Adequate / Good / Excellent / Unable to Comment** **1 - 2 / 3 – 4 / 5 – 6 / 7 - 8 / 9 - 10** **Notes:**	/10
Clinical Examination / Scientific Measurement / Engineering Analysis Does trainee undertake examination/measurement/analysis confidently, performing it appropriately and accurately?	**Poor / Unsatisfactory / Adequate / Good / Excellent / Unable to Comment** **1 - 2 / 3 – 4 / 5 – 6 / 7 - 8 / 9 - 10** **Notes:**	/10
Clinical /Scientific Judgement Has trainee displayed ability to make sound Clinical/Scientific judgements based on their execution of the task?	**Poor / Unsatisfactory / Adequate / Good / Excellent / Unable to Comment** **1 - 2 / 3 – 4 / 5 – 6 / 7 - 8 / 9 - 10** **Notes:**	/10
Completion of task Does trainee complete the task efficiently and satisfactorily? Is trainee aware of any time limitations for task completion?	**Poor / Unsatisfactory / Adequate / Good / Excellent / Unable to Comment** **1 - 2 / 3 – 4 / 5 – 6 / 7 - 8 / 9 - 10** **Notes:**	/10
Administration Was the trainee prepared for the task, completing all appropriate documentation and recording accurately any relevant results?	**Poor / Unsatisfactory / Adequate / Good / Excellent / Unable to Comment** **1 - 2 / 3 – 4 / 5 – 6 / 7 - 8 / 9 - 10** **Notes:**	/10
Professionalism Did the trainee conduct themselves professionally, respect confidentiality, and act in an ethically appropriate manner in terms of interaction with patients/other clinical staff? Did the trainee adhere to Good Scientific Practice principles?	**Poor / Unsatisfactory / Adequate / Good / Excellent / Unable to Comment** **1 - 2 / 3 – 4 / 5 – 6 / 7 - 8 / 9 - 10** **Notes:**	/10
Limitations Trainee demonstrates awareness of the limits of their responsibility and knows when and how to seek help.	**Poor / Unsatisfactory / Adequate / Good / Excellent / Unable to Comment** **1 - 2 / 3 – 4 / 5 – 6 / 7 - 8 / 9 - 10** **Notes:**	/10

Overall Clinical Care Did trainee show understanding, empathy and compassion towards patient care? Did they recognise importance of the procedure within the context of clinical diagnosis, treatment or management?	**Poor / Unsatisfactory / Adequate / Good / Excellent / Unable to Comment** **1 - 2 / 3 – 4 / 5 – 6 / 7 - 8 / 9 - 10** **Notes:**	/10
Feedback / Learning Needs Identified:		

Agreed Action:	**Feedback from trainee:**	**Overall Mark (%):**
		/100

Marking Scheme:

Poor	**Unsatisfactory**	**Adequate**	**Good**	**Excellent**
1 – 20	21 – 40	41 – 60	61 – 80	81 - 100
Totally inadequate demonstration of knowledge. Not able to link theory and practice. No appropriate themes identified.	Limited evidence of knowledge. Inappropriate links between theory and practice. Unsatisfactory reference to key themes.	Mostly accurate knowledge with satisfactory depth and breadth of knowledge. Sound integration of theory and practice with fair identification of key themes.	Comprehensive knowledge demonstrating very good depth. Clear sight into links between theory and practice. Demonstrates ability to transfer knowledge between different contexts appropriately.	Outstanding knowledge. Theory is linked to practice to an exceptional level and may be used to formulate new questions, ideas and challenges.
Signed Assessor:			**Discussed with trainee:**	Yes / No

Appendix 4: External Moderator visit report

Clinical Technologist Training Scheme
External Moderator Visit Report

Trainee Name:			
Training Centre:			
Location of visit:	**Date of Visit:**		
Moderator Name:	**Supervisor Name:**		
Training Centre Support	**Comments & Recommendations**		**Yes/No**
Training Facilities and Learning Resources Does the training department demonstrate a commitment to training by providing the trainee with appropriate facilities, access to learning resources, etc.?			
Protected Training Time Does the training department demonstrate a commitment to training, by way of scheduling protected training time (usually half a day per week)?			
Training Supervisor Does the training supervisor regularly (ideally monthly) meet with the trainee and provide the trainee with records of these meetings? Does the training supervisor organise, perform and document work-based assessments?			
List of Competencies Has a clear and concise list of work-based competencies been provided that covers the whole of the relevant RCT Scope of Practice? Have any academic or knowledge-based gaps which require study concurrent to learning been identified and addressed in the training plan?			
Training Plan and Provision of Training Given the workload, work environment and resources available, is the training plan realistic and achievable? Is the training centre providing and supporting the training according to the training plan?			
Portfolio Review	**Comments & Recommendations**		**Yes/No**
General Presentation Is the portfolio well presented with a content page, easy to follow and cross referenced?			
Evidence to support competencies			

Is each competency evidenced with: - Underpinning knowledge (theory)? - Overall explanation, description and detail of what is actually involved in the competency (skills knowledge)? - Examples of work undertaken, including data, results, sample protocols and sample reports?		
2x Case Studies Are two case studies being progressed appropriately, in a manner that provides evidence of good scientific practice? Are the cases studies of sufficient magnitude and depth (each a minimum 3000 words, typically 10-20 hours' work)?		
Log of Experience Is a log being maintained that refers to activities undertaken and activity dates?		
Reflective Practice Is reflective practice being carried out that demonstrates a progression of thought and understanding? Does the reflective practice cover the breadth of training, work being undertaken and scope of practice? Is the amount of reflective practice records appropriate to the stage of training progression?		
Reports Have supervisors and moderator reports been included in the portfolio? Have assessment reports been included in the portfolio?		
Training Review	**Comments & Recommendations**	**Yes/No**
Registrar / External Moderator / Chief Moderator Recommendations Have all previously raised recommendations been adequately addressed?		
Changes Has IPEM been informed of any administrative changes? Have all changes to the original training plan, competency list and study concurrent to learning been agreed with the training coordinator and external moderator?		
Feedback Given to Department and Trainee Is the overall pace and progression of training acceptable and aligned to the training plan? Is the trainee acquiring, developing and demonstrating the level of skills and knowledge required?		
Feedback to IPEM and Chief Moderator		

Signed External Moderator:		**Date:**	

Appendix 5: Result of Trainee's Final Assessment

RESULT OF STUDENT'S FINAL ASSESSMENT CLINICAL TECHNOLOGIST TRAINING SCHEME

Student's Name							
Specialist Area							
External Moderator			**Supporting Moderator**				
Training Route	**Education Only**		**Relevant Training and Experience**		**Other: Specify**		
Comments on Practical Work							

	SCORE	**PRINT NAME / Signature**	**PRINT NAME / Signature**
Practical Work	**/40**		
Portfolio	**/40**		
Viva	**/20**		
TOTAL	**/100**		

Result of Assessment – Refer to Guidance Notes

BORDERLINE PASS		**PASS**		**PASS WITH MERIT**		**PASS WITH DISTINCTION**		**FAIL**	

Borderline Pass result for ratification panel discussion purposes only.

*N.B. If the candidate fails the assessment, a composite report must be prepared indicating the reason for failure. The information should be sufficiently detailed to enable its use in the event of an appeal by the candidate. Reference should be made to the appeals procedure. Completed forms should be returned to: Membership & Training Department, IPEM, Fairmount House, 230 Tadcaster Road, York YO24 1ES

For Office use only

Ratified by:					

Appendix 5: Result of Trainee's Final Assessment

CLINICAL TECHNOLOGIST TRAINING SCHEME
Portfolio and Viva Summary Marking Sheet

Full Portfolio and Viva reports should be provided separately

Student's Name			
External Moderator			
Summary of Portfolio *Include areas of which should be explored further at Viva*			
Portfolio Score			
Print Name			
Signed		**Date**	
Supporting Moderator			
Summary on Portfolio *Include areas of which should be explored further at Viva*			
Portfolio score			
Print Name			
Signed		**Date**	
Agreed Score	**/40**		

Viva record

Examiner 1		**Examiner 2**	
Summary of Viva			
Viva	**/20**		
Signed		**Signed**	

Appendix 6: Portfolio Marking Template

Portfolio Marking Template for Trainee: _____

All of the sections identified below should be included within the portfolio. Omission of a scoring section will result in an unsuccessful submission. A weighting factor has been applied to the sections that are to be scored.

Topic	Max Score	Score	
General presentation and organisation of the Portfolio inc. contents page	5		
Training Plan – objectives with approximate timing, method of deliver and assessment			
List of competencies to be signed and dated when accessed and the outcome achieved (i.e. successful, unsuccessful)	0		
Evidence to support competencies – cross referenced to competency list. ○ Underpinning knowledge (**theory**) ○ Overall explanation, description and detail of what is actually involved in the competency (**skills knowledge**) ○ Examples of work undertaken, including data, results, sample protocols and sample reports (**all require trainee input /explanation not just copies of documentation**)	15 15 15		
Reports from conferences, courses or placements			
Case Study 1	12.5		
Case Study 2	12.5		
Log of Experience	5		

Reflective Practice	20		
Supervisors report – evidence of regular meetings and assessments			
External Moderators reports			
Total Score			
Average portfolio score awarded by the final assessment panel (maximum 40)			

Marking Scheme: **Poor**	**Unsatisfactory**	**Adequate**	**Good**	**Excellent**
1 – 20	21 – 40	41 – 60	61 – 80	81 - 100
Totally inadequate demonstration of knowledge. Not able to link theory and practice. No appropriate themes identified.	Limited evidence of knowledge. Inappropriate links between theory and practice. Unsatisfactory reference to key themes.	Mostly accurate knowledge with satisfactory depth and breadth of knowledge. Sound integration of theory and practice with fair identification of key themes.	Comprehensive knowledge demonstrating very good depth. Clear sight into links between theory and practice. Demonstrates ability to transfer knowledge between different contexts appropriately.	Outstanding knowledge. Theory is linked to practice to an exceptional level and may be used to formulate new questions, ideas and challenges.

Initially the portfolios are assessed and scored independently by the External Moderator and the Supporting Moderator. At the time of the viva the two moderators agree an overall score. Each section within the portfolio is allocated a score from 0 -100. A weighting factor will then be applied to the scoring sections of the portfolio. The final score is then adjusted to a maximum of 40.

Date _____

Name of Moderator _____

Contact IPEM Office if you have any queries – training@ipem.ac.uk or phone 01904 806365

References

Trent Medical Physics Training Scheme, Guidance for Assessors.
University of Salford marking scheme.

Contact Us

Should you have any queries regarding any of the information contained in this document please do not hesitate to contact the IPEM National Office in York.

The Registrar

Clinical Technologists Training Scheme

Institute of Physics & Engineering in Medicine

Fairmount House

230 Tadcaster Road

York YO24 1ES

Tel: 01904 806365
Email: training@ipem.ac.uk