Consortium for the Accreditation of Sonographic Education

Guidance for Education Providers on the Accreditation/Reaccreditation of BSc Programmes

Member Organisations

British Medical Ultrasound Society

British Society of Echocardiography

Chartered Society of Physiotherapy

College of Radiographers

Institute of Physics and Engineering in Medicine

Royal College of Podiatry

The College and Society for Clinical Vascular Science Great Britain and Ireland

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1. Introduction

The purpose of this new guidance document is to support Higher Education Institutions (HEIs) in the design and development of full-time BSc ultrasound programmes /courses by providing clarity on what the Consortium for the Accreditation of Sonographic Education (CASE) requires and why. It has been created in response to the changing ultrasound landscape and the subsequent proliferation of different types of ultrasound education and training.

Formed in 1993, CASE consists of seven member organisations "drawn together by a common desire to ensure that the education and training of sonographers in the United Kingdom is delivered at an appropriate level to ensure that those completing programmes or courses achieve a standard of competency to practise as professional practitioners". The primary role of the Consortium is to accredit high quality training programmes/courses that promote best ultrasound practice and ensure that ultrasound practitioners are safe and competent to practise, whilst considering informed views of service needs. In 2015 the Consortium agreed the following four principles that should be adhered to in respect to ultrasound practice and ultrasound education:

1. Reporting should **not** be separated from scanning.

2. Scanning is a 'dynamic' investigation in which the acquisition of suitable images and assessment of them is entirely operator-dependent at the time of the scan. Deficiencies in acquisition cannot be rectified by involving a more skilled practitioner at a later stage. Assessment and interpretation of saved images is recognised as sub-optimal practice although, as with all image interpretation, dual reporting can be helpful in increasing specificity.

3. The risk of patient harm and consequent litigation against any healthcare organisation providing a poor-quality service is very high and therefore the need for competence at the point of scanning is paramount.

4. Workforce modelling and the development of innovative training routes to meet the demand for sonography services should demonstrate increased efficiency of provision and effectiveness in delivery of diagnosis and treatment to patients".

The first CASE principle is of key importance for ultrasound examinations and has been recognised as such by the Society & College of Radiographers (SCoR) and the British Medical Ultrasound Society (BMUS) in their joint publication 'Guidelines for Professional Ultrasound Practice' in which they state the "ultrasound report should be written and issued by the

operator undertaking the ultrasound examination and viewed as an integral part of the whole examination".

Full-time BSc ultrasound programmes/courses are now available across the United Kingdom (UK); however, whilst the current demand for flexibility and innovation in programme/course content and delivery are to be encouraged, this must not be at the expense of patient safety. All CASE accredited programmes/courses must therefore include learning outcomes that are linked explicitly to a defined scope of practice, include assessment of theoretical and practical elements that reflect best practice (rather than minimal competence) and are achievable within the programme/course structure (including placement support).

Accreditation will only be considered for programmes/courses that incorporate the assessment of ultrasound clinical competencies within its portfolio.

A number of existing documents identify a recommended minimum basic theoretical training for imaging and non-imaging specialists, and it would be a reasonable starting point to assume that CASE requirements would be in line with these for ALL entry level practice. However, for applications that are technically complex or where differential diagnoses and interpretive, actionable reporting are required, existing CASE learning outcomes (Level 6) (Appendix 1) would need to be met.

CASE will need to be assured at the time of accreditation/reaccreditation that the title evidenced on the programme/course award certificate, issued on successful completion, reflects the defined areas of clinical competency and is otherwise fit for purpose. This should be accompanied by a detailed transcript (or equivalent) identifying the modules passed and the student's marks.

If you have any questions at this stage, please contact the CASE Education Officer at: case.education.officer@gmail.com

PLEASE NOTE: This guidance document should be read in conjunction with the CASE Standards for Education.

2. Relevant CASE Position Statements

Following in-depth review of CASE processes and requirements the following position statements were issued:

2.1 Recognition of Prior Learning

Recognition of prior learning (RPL) for use as part of a credit-bearing award "is a process of assessing learning achieved outside or within formal education or training systems which is recognised, if appropriate, for academic purposes. RPL can enable a learner to gain entry to a programme if the outcomes of their prior learning are judged as comparable to the entry requirements of the programme; and to gain credit within a programme if the outcomes of the prior learning are judged as comparable to the relevant outcomes of the programme for which credit is sought." (QAA Scotland, 2022). This can also be known as accreditation of prior learning (APL).

Education Provider's responsibility:

CASE acknowledges that different education providers use various methods for RPL and appreciates the need for flexibility. However, it is crucial to ensure that the RPL process is fair, appropriate, and consistent across accredited programmes.

Employers also need to be reassured that someone exiting with a CASE accredited award meets CASE standards, which includes assurance of competence in clinical modules that have been recognised through the RPL process. It is an expectation of CASE accreditation for clinical modules to include pass/fail competency assessment to UK standards of practice. Education providers need to clearly evidence how they determine this when using the RPL process.

Final award:

Education providers must ensure that an applicant meets all entry requirements for the CASE accredited programme in addition to their previous accredited learning e.g. clinical placement arrangements or evidence of English Language proficiency. The final award achieved, on successful completion of a programme of study using RPL, will be from the CASE accredited institution conferring the higher-level award. The marks from RPL modules are not included in the final award classification, so CASE expects to see evidence to demonstrate that students on CASE accredited programmes within their institution will not be disadvantaged.

CASE RPL process requirements:

To protect their own reputation and that of CASE, the assessment of prior learning by the education provider must be robust and comprehensive, ensuring that the knowledge, skills and competency recognised are equivalent to the learning outcomes of the accredited

programme. This may involve a combination of portfolio review, competency assessments, and practical evaluations.

CASE expects the following:

- *Clarity on which RPL processes are available to learners e.g. recognition of certified learning (RP(C)L) only or certified and experiential (RP(E)L) learning*
- *An evidenced process for reviewing RPL applications and appropriate supporting documentation*
- *Support for the learner to evidence their prior learning at the appropriate academic level*
- *Clarification on the mechanisms in place for faculty to evaluate the RPL processes and ensure consistency*
- *Details about how the academic assessment board and external examiner oversee the standards of RPL evidence and mapping to module and programme learning outcomes, including clinical competency where relevant*
- *Evidence to ensure that assessors involved in the RPL process are adequately trained and possess the necessary expertise to evaluate prior ultrasound learning effectively.*

CASE does not stipulate credits that can be bought forward; however, the education provider should have clear processes to demonstrate:

- *Maximum credit that can be transferred from another CASE accredited programme*
- *If applicable, maximum credit that can be transferred from a non-CASE accredited award*
- *Currency of learning and credit transfer.*

The RPL process must be transparent, with clear guidelines and criteria available to all applicants. Fairness must be ensured by applying consistent standards and providing applicants with feedback and opportunities for appeal.

2.2 Social Scanning

Social scanning is defined as the use of ultrasound for pregnant patients where there is no clinical justification for the scan. This may include scanning solely for fetal sexing and/or to capture souvenir images of the baby.

Issues around ‘social scanning’ have been raised as Programme/Course Leads are seeing an increase in applicants looking to qualify in sonography, not for diagnostic purposes but for

commercial reasons (e.g. baby scans for gender-reveal parties). They have asked for clarification on CASE's position and so the following response has been issued as a formal position statement:

CASE has a responsibility to provide assurance that ultrasound trainees completing an accredited course are safe, competent and have a clear and confident understanding of their scope of practice. This is at the heart of why CASE exists. The learning outcomes that must be met by students completing a CASE accredited course reflect the level of understanding and skill required for a first post competent practitioner, undertaking medical ultrasound examinations within an evidence-based environment. (For example, for obstetric ultrasound, these outcomes must be consistent with current national guidelines, including the NHS Fetal Anomaly Screening Programme or equivalent and Saving Babies Lives Care Bundle v3).

Members of the public are unable to distinguish between sonographers employed in an NHS context and individuals undertaking social scans. To safeguard patients, and to be able to hold practitioners to account, it is recognised that there is urgent need for statutory regulation of ultrasound practice in the UK. Personal accreditation of an individual's ultrasound practice is not a process that falls within the remit of CASE. However, in the absence of statutory regulation, CASE has a vital role in ensuring that all trainees completing an accredited course are prepared fully for practice within an NHS context. On completion of a CASE accredited award (BSc, PgC, PgD or MSc) sonographers are able to register as a sonographer with the Register of Clinical Technologists therct.org.uk

In line with the position of our member organisations, CASE accreditation is only applicable to courses of study that prepare students for the use of ultrasound imaging for medical diagnosis and /or as an aid to medical/surgical interventions. CASE will not accredit courses (full awards or focused) that prepare trainees solely for the purpose of social scanning where there is no medical justification.

2.3 Independent Scanning Prior to Award Ratification

Students enrolled on a CASE accredited programme/course must not undertake independent scanning/decision making without supervision until the final Programme/Course award has been ratified by the University examination board. For students achieving a pass grade in all academic and clinical assessments, final marks and the overall Programme/Course award remain provisional until subject to the scrutiny of the university academic examination boards. The position statement is as follows:

Until the final Programme award is ratified, the trainee remains a student of the university, and an appropriate level of supervision (commensurate with their ability) must continue to remain in place in line with university, CASE, BMUS and any other relevant United Kingdom (UK) professional body guidelines. The employer must be able to provide relevant indemnity cover for any individual being employed as a sonographer. Students/new sonographers are strongly advised to check that their employment contract covers this. Additional secondary professional indemnity insurance cover can be arranged, for example through their respective professional body, as long as employer primary insurance is in place.

2.4 Non-synchronised Events - CASE/Education Provider

The following statement is issued to clarify the potential impact of a non-synchronous event where a HEI validation event is held separately from a formal accreditation review meeting.

University approval/re-approval events must normally coincide with CASE accreditation/re-accreditation events. Where this is not possible, the CASE event is normally scheduled first. This provides opportunity for any CASE conditions and recommendations to be addressed during the formal internal event.

Where university validation for a programme has already occurred, there may be limited opportunity for programme teams to implement CASE requirements ahead of a scheduled intake. Where substantive changes are required to meet CASE conditions, it may be necessary for the programme to run for the affected academic year without accreditation. Conditions will then need to be addressed through formal internal University processes prior to confirmation of CASE accreditation.

It is the responsibility of the programme team to ensure that, where relevant, students joining the programme are informed that the programme is ***not*** *CASE accredited for that academic year. A clear statement to this effect must be included within the Student Handbook and other relevant programme/course documentation.*

2.5 Accreditation of Courses without University Affiliation

Historically, CASE have only considered accreditation of awards that are delivered by (or in affiliation with) a university that complies with the standards set by *The Quality Assurance Agency for Higher Education* (QAA) Quality Code for Higher Education. However, we recognise the limitations this sets and so have issued the following position statement:

The QAA is an independent body entrusted with monitoring and advising on standards and quality in the UK higher education sector. The power to award a degree level qualification is dependent on compliance with these standards and ensure that:

- *the academic standards of courses meet the requirements of the relevant national qualifications framework;*
- *the value of qualifications awarded to students at the point of qualification and over time is in line with sector-recognised standards (this includes award of transferable academic credits);*
- *courses are well-designed, provide a high-quality academic experience for all students and enable a student's achievement to be reliably assessed;*
- *from admission through to completion, all students are provided with the support that they need to succeed in and benefit from higher education.*

This level of student support, external scrutiny and governance would not typically be found with private course providers that sit outside of this quality framework.

The rapid emergence of point-of-care applications has resulted in some expansion of ultrasound training and education provision into non-conventional settings. Courses that are delivered outside of this standard model would not normally fall within CASE remit. CASE welcomes innovation and recognises the need for exploration of alternative training models. However, for a focused course or modular award to be consider for accreditation, CASE would require assurance of the following provisions:

- *Qualification governance equivalent to that provided by HEI affiliation*
- *Effective student support in place (pastoral and academic)*
- *Robust competency assessments (academic and clinical)*
- *Qualification linked to a well-defined scope of practice*
- *All relevant CASE level 6 learning outcomes are met*
- *Where these conditions can be met, CASE welcomes submission of courses outside of our normal requirement for HEI affiliation for consideration for accreditation.*

2.6 Programme / Course Equivalence

The Consortium for the Accreditation of Sonographic Education (CASE) is often asked about the 'equivalence' of ultrasound programmes which are not themselves CASE accredited, predominantly from outside the UK and Ireland. The position statement is as follows:

It is not within the remit of CASE to comment on 'equivalence' of non-CASE accredited programmes or individual practitioner's qualifications. As ultrasound is not a registered profession in the UK, the ultimate responsibility for assessing the equivalence of an award held by any employee, and ensuring that the knowledge, skills, and competence of sonographers are appropriate for UK practice, resides with the employer. This applies to ***any*** *sonographer with or without a CASE accredited award and regardless of the country of qualification.*

Additional information can be found at: CASE - CASE Equivalence (case-uk.org).

2.7 Musculoskeletal Ultrasound Position Statement

Applicants should be aligned with an appropriate professional body and have an appropriate amount and type of pre-existing experience in a clinical musculoskeletal or ultrasound specialism. Musculoskeletal is therefore not currently an option for direct-entry ultrasound courses delivered at undergraduate level.

3. Programme/Course Philosophy

Programmes/courses must support the development of sonographers with the underpinning knowledge, skills and attributes required for safe and effective ultrasound practice. Sonographers should also develop critical thinking skills to enable them to deal with situations arising within their scope of practice and demonstrate a clear understanding of their strengths and limitations and role within the patient care pathway. Sonographers should have a sound understanding of patient care pathways, local and national guidelines, develop inter-professional and team working, perform audits and engage in research collaborations to make service improvements. The importance of and engagement with 'Experts by Experience,' service users and carers within their work is an essential element of the role and education of sonographers. As a practitioner progresses through their career, they should develop expertise that can be adapted to new and increasingly complex situations and, at all levels, be supported through a formal, structured preceptorship period, with appropriate on-going mentoring, continuing professional development (CPD) and support to undertake further educational study and research.

At all levels, it is important that qualified health practitioners undertaking sonography as part of their scope of practice follow Royal College of Radiologists (RCR) guidance and:

- Acknowledge the importance of robust clinical governance and inter-professional relationships within teams;

- Practise within their level of competency;
- Practise in accordance with their local clinical protocols, an approved scheme of work and agreed delegation of clinical responsibility;
- Refer to more experienced sonographic and radiological colleagues when uncertain of the findings and/or seek advice about patient management/further investigations;
- Practise according to current evidence-based professional standards and requirements.

Where the practise is outside the Radiology Department setting, medical input may be from other colleagues such as vascular surgeons, rheumatologists, obstetricians or gynaecologists.

The CASE definition of scope of practice is "*The area or areas of your profession in which you have the knowledge, skills and experience to practise lawfully, safely and effectively, in a way that meets CASE standards and does not pose any danger to the public or to yourself*."

In order to meet the requirements of the Competition and Marketing Authority (CMA), CASE stipulates that including the information below (in blue) in all marketing material and student-facing documentation is a condition for accreditation/reaccreditation.

As 'Sonographer' is not currently a protected title in the UK, direct-entry graduates will NOT be eligible to be registered with The Health and Care Professions Council (HCPC), although it is hoped that this will become a possibility in the future. For this reason, employment may not be possible in certain National Health Service (NHS) Trusts and some private sector organisations, although many organisations already employ sonographers from non-traditional backgrounds. Graduates from direct-entry programmes/courses will, however, be eligible to join the Register of Clinical Technologists (RCT) accredited by the Professional Standards Authority (PSA).

Please note that graduates will not be able to perform FASP examinations independently upon qualification according to the BMUS Career and Progression Framework and the Fetal Anomaly Screening Programme (FASP) service specification which requires sonographers to have a postgraduate ultrasound qualification.

Although sonography is not yet subject to statutory registration, qualified health practitioners, such as diagnostic radiographers, midwives and physiotherapists, undertaking BSc ultrasound programmes/courses will already be registered with the relevant regulatory body and will therefore be required to work within their scope of practice at all times.

3.1 Programme/Course Aims

Level 6 programme/course aims are:

- To produce a competent, safe sonographer with the knowledge, understanding and ability to independently undertake, interpret, analyse and report ultrasound scan findings within their scope of practice, with appropriate supervision available;
- To equip the sonographer with the appropriate professional attributes including the six C's of care, compassion, courage, commitment, competence and communication skills, to work effectively and empathetically with a wide range of service users and carers, and meet core skills required for professional practice;
- To ensure that the sonographer has a thorough understanding of their scope of practice and the importance of working under the supervision and mentorship of senior staff to develop personal, professional, clinical and research skills;
- To develop sonographers who are safe, reflective practitioners, responsive to patient and service needs, with analytical and problem-solving skills, the ability to critically review evidence and clinical practice and disseminate knowledge to others;
- To ensure the sonographer has a comprehensive understanding of how to evidence and develop their skills, knowledge, reporting practice and clinical competency to progress to the next level of practice.

4. The Accreditation Process

The accreditation process for a full-time BSc ultrasound programme/course will require a formal, joint in-person or virtual validation event (using the same agenda). A visit to the Education Provider offering the programme/course or a virtual tour will also be required.

4.1 Application for Accreditation/Reaccreditation

The BSc ultrasound programme/course documentation is to be sent to CASE twelve months before the proposed validation/re-validation event and a decision as to whether the programme/course satisfies the conditions for CASE accreditation will be made at the next CASE Committee meeting. Where a programme/course does not meet the criteria for entry into the accreditation process, an explanation will be given and advice may be offered to enable a successful application to be made. For example, this may be because the proposed programme/course is too broad in terms of subject matter or lacks practical clinical competency training and assessment.

4.2 Accreditation Timeline and Associated Responsibilities

Action	Indicative Time - indicates before the event + indicates after the event	Education Provider	CASE Committee	Lead Accreditor	Co-accreditor	Shadow Accreditor
Application submitted for accreditation	-12 months	☐				
CASE agrees to accredit or sends explanation	-9 to 12 months		☐			
Accreditation team assigned	-9 to 12 months		☐			
Lead Accreditor liaises with programme/course team	When appointed			☐		
Support provided (as required)	-6 months	☐		☐		
Date for event agreed between all stakeholders	-4 months	☐		☐	☐	☐
Documentation submitted to CASE accreditation team	-2 months	☐				
Accreditors review the documentation	-2 to -1 month			☐	☐	☐
Accreditors send initial feedback to Lead Accreditor	-6 weeks				☐	☐
Lead Accreditor arranges meeting with accrediting team	-6 or 7 weeks			☐		
Accreditors discuss the documentation	-6 or 7 weeks			☐	☐	☐
Additional advice sought from Education Officer (as required)	-6 or 7 weeks		☐	☐		
Request further documentation/evidence from Education Provider (as required)	-5 or 6 weeks			☐		
Review additional documentation (as required)	-5 weeks			☐	☐	☐
Collate feedback from all accreditors and send to Education Provider [named contact]	-1 month			☐		
Possible further response from education provider	-2 weeks	☐				
Draft validation event agenda circulated	-2 weeks	☐				
Agenda agreed	-2 weeks	☐		☐		
Event takes place in-person/virtually	Event	☐		☐	☐	☐ **If remote attendance**
Discussions take place	Event or online	☐		☐	☐	
Minutes taken	Event or online	☐				

Action	Indicative Time - indicates before the event + indicates after the event	Education Provider	CASE Committee	Lead Accreditor	Co-accreditor	Shadow Accreditor
Initial feedback provided*[1]	Event or online			☐		
Headline report / meeting minutes received from Education Provider	+1 week	☐				
Draft accreditor report completed	+1week			☐		
Draft accreditor report agreed	+1 week			☐	☐	☐
Debrief meeting arranged with CASE Education Officer, Committee Members and Accrediting Team	+2 weeks				☐	
Debrief meeting	+1 to +2 weeks		☐	☐	☐	☐
Lead Accreditor informs Education Provider of finalised conditions, recommendations and commendations*[2]	+2 weeks			☐		
Amended documentation submitted to Accrediting Team (as required)	Agreed at event or within 6 weeks post-event	☐				
Discussion on revised documentation (as required)	As agreed, +3 months			☐	☐	☐
Final Accreditor Report agreed with Accrediting Team and sent to CASE	+2 weeks after final documents reviewed			☐		
CASE Committee review results of accreditation	+3 months		☐			
CASE inform Education Provider and provide feedback	+ 3 months		☐			
Definitive documents sent to CASE, fees up to date	+4 months	☐				
Programme/Course entered onto CASE Directory of Courses	+4 months		☐			

*[1] Feedback may be given at the event or afterwards depending on the circumstances. New or complex programmes/courses may require consultation with CASE Committee. No decisions at an event are final.
*[2] All feedback is subject to review by CASE Committee.

4.3 Interaction with the CASE Accreditors

Following acceptance of a course for accreditation/re-accreditation CASE will appoint a Lead Accreditor, a Co-accreditor and a Shadow Accreditor. The Lead Accreditor will contact the Programme/Course Lead and liaise with them to agree a way to proceed. In particular, they will indicate whether a formal meeting/event is required and and whether it is in-person or virtual.

If a face-to-face 1-day CASE-only accreditation event is required, the example timetable shown below can be used by accreditors and adapted to their own needs. This example includes all activities that should be covered, including private time for CASE Accreditors. The start time can be adjusted to suit the accreditors travel arrangements. Once agreed, the Lead Accreditor will share the timetable with the Programme/Course Lead so that the event can be arranged. If a virtual event is planned, separate online meetings will need to be set up for the private CASE Panel meetings described below.

Example Timetable for a CASE-only Accreditation Event	
TIME	**ACTIVITY**
09:00 – 09:30	REFRESHMENTS
09:30 – 10:00	Guided tour of the University's ultrasound facilities e.g. Simulation Suite
10:00 – 10:30	Private CASE Panel meeting with external stakeholders and Clinical Placement Leads
10:30 – 11:00	Private CASE Panel meeting with students (if revalidation)
11:00 – 11:10	Welcome and Introductions
11:10 – 11:20	Brief presentation from the Programme/Course Team with brief Q&A session
11:20 – 11:30	Dean's report to CASE Panel demonstrating support for the Programme/Course
11:30 – 12:30	Main question and answer discussion between the Team and the CASE Panel
12:30 – 13:30	LUNCH BREAK
13:30 – 14:00	Private CASE Panel meeting to discuss and agree conditions, recommendations and commendations
14:00 – 15:00	Discussion of proposals between the Team and the CASE Panel
15:00 – 15:45	Private CASE Panel meeting to agree outcome, conditions, recommendations and commendations
15:45 – 16:00	CASE Panel provide feedback to the Programme/Course Team (including the identification of areas of good and best practice)
16:00	CLOSE

Student and stakeholder feedback may be required even if no formal meeting/event occurs. In the case of a formal validation meeting, a secretariat to minute proceedings is normally arranged by the Programme/Course Faculty.

Following any formal meeting/event and review of the documentation, the Co-Accreditor will convene an online post-accreditation/reaccreditation debrief meeting to act as a feedback mechanism between the accreditors and CASE Committee members. The purpose of this meeting is to discuss the proposed conditions, recommendations and commendations with Committee members to ensure parity across all CASE accredited programmes.

The online debrief meeting also supports accrediting teams by providing a forum to explore any challenges and concerns related to the event, the documentation, the conditions and/or the recommendations. The Lead Accreditor, Co-Accreditor and Shadow Accreditor should attend, as it presents a learning opportunity for the accrediting team to discuss any issues after a period of reflection.

Following the online debrief meeting, the Lead Accreditor will prepare a formal report using the BSc Programme/Course proforma for consideration and action by CASE Committee at the next meeting.

CASE will then inform the Programme/Course Lead of the result of the accreditation process or request further information, as required.

CASE accreditation for a BSc Programme/Course will normally be for five years; however, an interim review is normally undertaken at two years for new programmes/courses. In exceptional circumstances CASE may grant a short extension of a current accreditation period; for example, to fit in with an institution's internal review period.

PLEASE NOTE: Accreditor travel and accommodation expenses are paid by the Programme/Course Faculty.

4.4 What are you, as CASE accreditors, looking for?

Programme/Course documentation should include clear detail regarding the following:

- Does the programme/course title reflect the defined scope of practice?
- The clinical applications to be covered and any limitations to the scope of practice?
- The duration of the programme/course (this will normally be three years);

- The amount of face-to-face contact time between the programme/course team and the students must be a minimum equivalent of four days per module; however, where blended e-learning is included there must be a minimum of two full contact days;
- The content of the teaching provided;
- How knowledge and understanding of the theory will be assessed;
- How the core topics of science and technology and professional issues will be covered;
- The practical clinical training and simulation timetabling;
- How the students will gain practical clinical experience;
- Who will supervise students' practical training throughout the programme/course?
- How the students are to be assessed to ensure competence to practise;
- The titles of the default awards e.g. University Certificate in Healthcare. Default awards **must not** include the word 'ultrasound' as this may imply clinical competence.

In relation to the above, you need to be aware of the following statement to reinforce the use of the Documentation Checklist (Appendix 2) and to understand that poor documentation can cause a delay in the process.

CASE accreditors undertake this work in addition to their substantive roles. To ensure timely and effective accreditation processes, documentation should be complete, in a logical order with clear indexing and sent in a timely manner.

The CASE website has a section entitled 'Documentation requirements - A checklist for the course team' to assist course teams when preparing for accreditation / reaccreditation.

Inaccurate, incomplete, contradictory or disorganised documentation takes up an enormous amount of accreditor time. CASE will no longer be able to review substandard documentation. Course teams will be asked to follow the guidance and complete the documents to an acceptable standard otherwise this may delay accreditation / reaccreditation.

5. Criteria for Successful Accreditation

CASE supports innovation in development and flexibility of delivery for all medical ultrasound related educational programmes/courses, actively encouraging the utilisation of an outcome-based approach throughout the process. Educational and training paradigms promote the philosophy of student-centred learning supported by appropriate and robust tutor provision, in addition to the traditional method of lecture-based delivery. This places the responsibility of learning jointly on the student and the tutor. Material may also be presented to the student by electronic means as blended learning. Simulation of scanning is increasingly being used as a

teaching and assessment tool and is to be encouraged, as it can reduce the time required to achieve competent scanning whilst helping to monitor student progress. During the validation and accreditation process, CASE accreditors will expect to see documented evidence that supports this mixed approach both in the classroom and workplace.

CASE will look to Programme/Course Leads to embed originality of thought and evidence-based practice within the curricula, mode of delivery and assessment process, whilst complying with current international, national and local legislation, healthcare policy and professional guidelines, to ensure that practitioners meet the required standards of practice. In particular, CASE will support programmes/courses that offer learning in such a way as to suit the workforce for whom they are developed, whilst ensuring that a competency to practise outcome is paramount.

5.1 Scope of Validation

There are seven areas of particular importance which accreditors, programme/course leads, and clinical teams will need to consider in order to secure CASE accreditation. These are:

- programme/course learning outcomes;
- programme/course content and learning material;
- theoretical and clinical assessments;
- academic and clinical teaching teams;
- academic learning environment;
- clinical skills placements;
- quality assurance procedures.

The contents of this section are appropriate for both accreditation and re-accreditation of programmes/courses. CASE will expect information relating to the above areas to be embedded appropriately throughout the programme/course documentation and used as a basis for discussion at the validation/interim review/revalidation meeting/event.

5.2 Programme/Course and Module Learning Outcomes

The primary programme or course outcome assessed by CASE is competency to practise which, according to the CASE principles, includes the ability to both perform a scan and to produce a definitive, interpretive, actionable clinical report. An institution seeking CASE accreditation must, therefore, satisfy CASE that the learning outcomes for the programme/course or modules can be satisfactorily achieved through its delivery of the learning material and associated assessments.

A newly qualified BSc (Hons) graduate sonographer will normally enter the workforce as a career level 5 sonographer undergoing a pre-agreed preceptorship period. The recommendation from the British Medical Ultrasound Society (BMUS) for career level 5 sonographers is that they will be able to perform, analyse and interpret scans within a defined scope of practice within the ethical and legal boundaries of the profession. They will be able to produce a provisional clinical report aligned to local protocols with appropriate preceptorship.

They will also be able to perform Fetal Anomaly Screening Programme (FASP) scans under direct supervision; however, they will need to complete a PgC Ultrasound in order to progress to do FASP scans independently. Importantly, they must be able to recognise the limitations of their clinical practice and know when to consult with senior colleagues and, as a result, will not be permitted to work alone at satellite units or out-of-hours.

5.3 Mapping Programme/Course Learning Outcomes

The programme/course learning outcomes indicate what a student should be able to do by the end of the programme/course and must be relevant to the clinical application of ultrasound being studied. The CASE Level 6 Learning Outcomes are shown in Appendix 1.

Unlike MSc programmes/courses that are entirely delivered and assessed at academic level 7, BSc programmes/courses progress from academic level 4 in year 1 to academic level 5 in year 2 and academic level 6 in year 3. Accreditors therefore need to see evidence of the use of a spiral curriculum within the programme/course design, with all of the key topics threaded throughout the entire programme/course. The level 6 programme/course learning outcomes must be accurately mapped to the CASE Level 6 Learning Outcomes.

National Occupational Standards for Sonography (Appendix 3), developed as part of the National Health Service (NHS) Knowledge and Skills Framework describe the “skills, knowledge and understanding needed to undertake ultrasound examinations to a nationally recognised level of competence. They focus on what the sonographer needs to be able to do, as well as what they must know and understand to work effectively.”

The Society and College of Radiographers (SCoR) and the British Medical Ultrasound Society (BMUS) support the minimum training requirements for the practice of medical ultrasound in Europe proposed by The European Federation of Societies for Ultrasound in Medicine and Biology (EFSUMB), which includes theoretical and clinical education, with clinical competency assessment.

UK Higher Education Institutions (HEIs) refer to the minimum training requirements identified in the 'Ultrasound Training Recommendations for Medical and Surgical Specialities' published by the Royal College of Radiologists (RCR, 2017), along with the 'Standards for Interpretation and Reporting of Imaging Investigations' (RCR, 2018) when developing ultrasound programmes/courses. These documents, which have been used to inform the development of ultrasound educational standards, can be found at:

Recommendations for specialists practising ultrasound independently of radiology departments: safety, governance and education | The Royal College of Radiologists

Standards for interpretation and reporting of imaging investigations, Second edition | The Royal College of Radiologists (rcr.ac.uk)

As part of the accreditation process, module and programme/course learning outcomes should be mapped to the relevant CASE learning outcomes in the Standards for Sonographic Education document and to the National Occupation Standards (NOS), to show how these outcomes are met within the programme/course.

- For BSc direct-entry programmes/courses, mapping should be to the CASE Level 6 learning outcomes, ultrasound imaging NOS and the 'Standards of Proficiency for a Sonographer' (based on HCPC standards) (Appendix 4).
- For each module, the programme/course documentation should show how these outcomes are to be assessed.
- The CASE learning outcomes, NOS mapping documents and 'Standards of Proficiency' are all available on the CASE website.

5.4 Programme/Course Content and Learning Material

CASE will consider the Programme/Course learning material in terms of its specific clinical and academic topic areas. Although the programme/course titles and learning components may vary between institutions and faculties, the learning material will contain essential knowledge that is common to all.

CASE requires you to clearly evidence that the Programme/Course seeking accreditation/interim review/reaccreditation delivers this learning material effectively and, as such, CASE accreditors will expect to see evidence in the documentation of learning theory related to contemporary clinical practice.

For purposes of accreditation, CASE divides the learning material into distinct components:

- **Science and Technology**

Typical subject areas include principles of ultrasonic imaging; ultrasound and its propagation in tissue; image generation; ultrasound artifacts; principles of Doppler ultrasound; development of ultrasound imaging technology; equipment choice and manipulation; equipment appraisal and evaluation; image recording; ultrasound bio-effects; quality assurance. These are to be linked to image acquisition, optimisation and interpretation, and must be relevant to the clinical applications of ultrasound being studied.

- **Professional Studies**

As students completing full-time BSc programmes/courses tend to be new to health care, professional development and the completion of mandatory training are of vital importance. Accreditors therefore need to see evidence that these are being covered appropriately and by whom; for example, it needs to be clear within the documentation who is responsible for delivering and keeping records of the mandatory training undertaken by students.

Typical professional development subject areas include: professional conduct; National Health Service (NHS) core values; safe-guarding; interprofessional teamworking; communication skills; the General Data Protection Regulation (GDPR); patient-centred care and advocacy; cultural competence; family-centred care dynamics; mental health awareness; health and safety (including ergonomics and infection control); integration into the healthcare setting; reflective practice; digital literacy; image appraisal; clinical reporting; judgement and decision-making; clinical audit; evidence-based practice and clinical governance; national and local healthcare policies and ethics; promoting health and wellbeing; self-development; critical appraisal skills and generative AI.

- **Specific Clinical Topics**

All CASE accredited programmes/courses are required to identify the specific clinical topics, such as obstetric, pelvic and general medical ultrasound, which will be covered throughout the programme / course. The following will need to be included in relation to each clinical topic:

- Anatomy, physiology and patho-physiology;
- Applied anatomy, physiology and patho-physiology;
- Scanning methods and techniques, including relevant measurements;
- Power Doppler, colour flow mapping and spectral analysis;
- Ultrasound appearances, including normal anomalous appearances and the appearances of common pathological processes;

- Clinical reporting;
- The contribution ultrasound makes to the clinical management of patients;
- The role and value of complementary imaging.

Typical subject areas within specific module content are as follows:

- General medical applied abdominal, pelvic and systemic anatomy and patho-physiology; scanning methods, techniques and measurements for pelvic and general medical ultrasound (to include superficial organs); ultrasound appearances of the gastrointestinal system; male and female genitourinary system; retroperitoneal structures; superficial structures; abdominal pathology; common gynaecological pathology.
- Gynaecology applied abdominal and pelvic anatomy and patho-physiology; embryology and physiology of the reproductive process; scanning methods, techniques and measurements for pelvic and renal ultrasound; ultrasound appearances of the female genitourinary system; gynaecological pathology.
- Obstetric applied abdominal and pelvic anatomy and patho-physiology; embryology and physiology of the reproductive process; prenatal screening and counselling; scanning methods, techniques and measurements for obstetric, pelvic and renal ultrasound; fetal development; placental morphology and function; fetal biometry; growth profiles and wellbeing, antenatal screening; early pregnancy problems; multiple pregnancy.
- Vascular applied vascular abdominal, pelvic and systemic anatomy and patho-physiology; principles of continuous and pulsed wave Doppler imaging; principles of power Doppler and colour flow mapping; volume flow measurements; haemodynamics; scanning methods, techniques and measurements for vascular ultrasound; clinical applications (including lower limb vasculature, upper limb vasculature, abdominal applications, intra- and extra-cranial carotid vasculature).

Please note that this list is not exhaustive.

Theory-only Clinical Modules

CASE will consider the inclusion of theory-only ultrasound modules in a programme/course on condition that student clinical competency, in the pathway in which it is embedded, can be evidenced by an additional clinical ultrasound module that reflects the accredited award.

Clinical Combination Modules

CASE may consider a clinical ultrasound module combination, such as obstetrics and gynaecology, in a CASE-accredited pathway. However, where a module contains two major clinical components, consideration should be given to dividing the module. Normally, such a module will have been developed by programme/course teams following a specific request from service and will contain a basic learning and skills element related to the minor clinical component. Programme/course teams should ensure that the rationale is robust, the learning outcomes match the dual nature of the module profile, the assessments are developed to reflect the learning experience and that the balance between the subject areas is appropriate. The module credits for combination modules will need to be appropriate for the content. Accreditors will spend time during the accreditation process to ensure that this type of module aligns with others in the programme/course and that any duplicate learning and assessment that may arise during students' module selection or progression can be dealt with appropriately by the programme/course team.

5.5 Programme/Course Delivery

Full-time BSc programmes/courses may be delivered in isolation or as part of an undergraduate suite or framework of pathways. It is therefore vital that the documentation you submit makes this explicitly clear so that accreditors can ask relevant questions in order to be assured regarding parity of student experience. It is particularly important to know whether the BSc programme/course is going to be delivered as part of a new or an existing suite or framework, as the use of an existing suite or framework will provide evidence of the efficacy of this delivery method. It also means that feedback from current staff and students can be sought and obtained.

It is usual for full-time BSc programmes/courses to be comprised of six twenty-credit modules per academic year, leading to a total of 360 credits for the intended award. Accreditors need to ascertain whether any modules are common/shared with other professions and, if so, whether they represent true interprofessional learning or simply co-teaching with students on other pathways. It is also important to ensure that lesson plans and formative feedback are consistent across groups and that all staff delivering common/shared modules are able to include examples that are relevant to the variety of different professional pathways within their groups.

It may also be appropriate for BSc ultrasound students to be co-taught with MSc ultrasound students; for example, in relation to science and technology. However, in this instance, the learning outcomes and assessments must be aligned to the students' current academic level.

Ideally, the timing of the programme/course delivery pattern should facilitate linkage between theory and practice. In other words, the delivery of the taught theory modules should align with the relevant clinical modules/placements so that students can apply the theory they have learned so far.

6. Theoretical and Clinical Assessments

All CASE accredited programmes/courses require a robust and transparent process for monitoring and assessment of a student or trainee's clinical progress and competence. These guidelines are designed to ensure patient safety, maintain professional standards and ensure equitable provision of academic awards. They indicate the areas the accreditors will examine to validate the achievement of clinical competence in scanning practice. Details of how the programme/course will implement all aspects of clinical training and assessment of competence should therefore be given in the course documentation.

An institution seeking CASE accreditation must satisfy CASE that the assessment strategies applied to the academic and clinical components are sufficiently rigorous to enable successful students and trainees to demonstrate such skills as appropriate to a competent practitioner.

These strategies must be appropriately matched to the learning outcomes for the programme/course. CASE advises that the assessment methods used for the academic components of the programme/course reflect relevant aspects of the clinical or professional role of the competent practitioner and, wherever possible, are linked to practice.

Examples of typical theoretical methods of assessment may include objective structured tests (OST, OSE or OSCE), multiple choice questions, case studies, essays, presentations, posters, portfolios, unseen examinations, open book examinations and on-line discussions. Peer or group assessment may be used where appropriate. Electronic assessment will be considered; however, it must demonstrate academic rigour for Level 7 programmes/courses. In the absence of evidenced exceptional/mitigating circumstances or equivalent, CASE permits two attempts at each assessment (a first attempt and one reassessment). CASE does not permit the use of compensation or condonement in relation to failed elements of assessment; all assessments must be passed. In addition, CASE does not support undefined assessment length, or 're-take' modules where a student has exhausted both first and reassessment opportunities on the first attempt at a given module.

Simulation can be offered as a response to the challenge of ensuring consistent learning in clinical practice and has become increasingly attractive as an alternative education strategy in many settings. Simulators have a valuable role in giving the trainee exposure to specific scans and pathologies in a standardised setting, which enables the trainee to gain in confidence whilst learning to scan. Psychomotor skills can be developed in the safety of a classroom, and the trainee will be introduced to a wide range of scanning appearances to prepare them for real-life scanning. The use of simulators can never replace scanning performed in a clinical setting with patients and should therefore only be incorporated as an adjunct during training. Simulators provide a tool for giving feedback to the trainee during formative training and may also have a limited role within a summative assessment. This, however, should not substitute assessment in a real clinical situation that would include patient interaction, scanning, management of machine set-up and reporting.

Clinically, the emphasis needs to be on the demonstration of competence. The number of scans completed, and the period of supervision needed to achieve this, may vary between different areas of practice and individual students. Self-audit against an agreed standard is recommended to provide evidence that learning outcomes have been met.

As the clinical supervision and experience required is dependent on the scope of intended learning outcomes, CASE will consider each individual programme/course to ensure that these are achievable within the proposed clinical practice arrangements.

Gaining clinical competence may be aided by keeping a log of scans undertaken, whether they are observational, supervised-assisted or supervised-unassisted, together with a brief indication of the reason for referral, the outcome of the scan and any learning points noted. This log, which may form part of a portfolio, will provide a record of the students' progress against defined milestones and evidence of the range of ultrasound examinations undertaken.

Gaining extra scanning experience through the use simulation, where available, is encouraged to increase confidence when performing scans and operating equipment controls. This is particularly helpful during the early stage of a programme/course, as it facilitates the development of hand-eye co-ordination and scanning techniques in a safe learning environment.

In addition to appropriate patient management, achieving clinical competence includes being able to operate the scanner controls in order to optimise the image acquisition for each patient, to obtain the required images of the anatomy and pathology being examined, together with any measurements, and to write a clinical report of the examination. All of these aspects of

clinical competence need to be assessed to determine whether baseline clinical competence has been achieved.

The fundamental aim of CASE is to ensure that, on completion of a period of learning, the exiting students or trainees are clinically competent to undertake ultrasound examinations and are professionally responsible for their own workload. **In order to demonstrate competency, clinical assessment must be undertaken in all CASE accredited programmes/courses**.

Clinical competence should be formally assessed and documented by the student's practice educator/mentor/clinical supervisor periodically throughout the programme/course using a Formative Clinical Assessment Form (an example is shown in Appendix 5), with ongoing developmental feedback being given to the student. The aims of the formative clinical assessment process are multifold, in that they facilitate familiarity with the clinical assessment process, allow identification of the student's current strengths and weaknesses, provide evidence of sufficient/insufficient progress and demonstrate the level of proficiency attained in the relevant pre-defined areas of clinical practice. As a result of this process, targeted interventions must be put in place to ensure that students are ready to undertake the summative clinical assessment by the course submission date.

CASE requires that clinical assessments must carry a Pass or Fail criterion, where Pass is a minimum standard that is equivalent to safe practice or baseline clinical competence. The assessment methods employed must be clearly identified and the rationale appropriately justified by the programme/course team or faculty. An example of a Summative Clinical Assessment Form is shown in Appendix 6.

Two internal clinical assessors are required for every summative clinical **assessment**. For first attempts, one **MUST** be the student's practice educator/mentor/clinical supervisor and the other must be a suitably qualified independent assessor who has not been heavily involved in the training of that student.

For every summative clinical **re-assessment**, two assessors are required. One **MUST** be the student's practice educator/mentor/clinical supervisor and the other may be a member of the academic team staff or a trained assessor acting as a representative of the education provider. Both of these individuals must be qualified in the clinical application of ultrasound being studied/assessed.

The programme/course team or faculty need to demonstrate how external moderation will be applied for ensuring consistency of clinical assessments across different clinical departments.

6.1 Academic and Clinical Teaching Teams

In this context, the programme/course team is taken to mean those individuals who contribute to the delivery of the academic and clinical components of the programme/course and to its quality assurance. The terminology for the different roles varies amongst professional groups. The terms below are to assist in defining each role, although there may be some overlap between roles in practice.

- **Education/Training Provider**

A higher educational institution (HEI) or training course centre providing a CASE accredited programme/course. The education and training provider must provide support, advice and regular training updates for individuals who contribute to the delivery of the clinical components of the programme/course and to its quality assurance.

CASE will normally expect practice educators/mentors/clinical supervisors and external assessors/external moderators/independent assessors to attend training run by the education and training provider, to ensure sharing of good practice and continuing updates. The education and training provider is expected to organise such training days, including additional training following any major changes to the programme/course. If on-line training is utilised, CASE will need to see evidence of this to assess the suitability for preparing clinical staff for their role in relation to the delivery of the programme/course.

- **Academic Teaching Team**

CASE requires that the Programme/Course Leader, or Deputy, holds a postgraduate ultrasound qualification or Diploma in Medical Ultrasound (DMU) and has at least two years appropriate clinical experience. CASE also requires that the programme/course team must have an adequate level of expertise and staffing to cover the anticipated student numbers.

CASE also strongly recommends that:

- At least one other member of the academic teaching team holds an ultrasound qualification and has had relevant clinical experience;
- At least one member of the academic teaching team holds an ultrasound qualification and has an honorary or permanent contract with a local department in order to be able to regularly participate in ultrasound sessions;
- At least one member of the teaching team is qualified to deliver the science and technology component of the programme/course.

- **Practice Educator / Mentor / Clinical Supervisor**

Ultrasound practitioners in the clinical placements identified as practice educators, mentors or clinical supervisors are named individuals who lead on the clinical teaching of a student or trainee. They are responsible for the delivery, integration and quality of the clinical learning episodes and for ensuring that they match those of the theoretical knowledge acquired in the classroom. It is expected that the practice educator/mentor/clinical supervisor will work closely with the student, facilitating the clinical training and ensuring that learning outcomes and competencies are achieved within the designated timeframe. All students/trainees must have an appropriate level of supervision (commensurate with their ability) which must continue to remain in place in line with university, CASE, BMUS and any other relevant United Kingdom (UK) professional body guidelines.

In order to provide high-quality experiential learning in the workplace, the practice educator/mentor/clinical supervisor must have a wide range of experience and hold a recognised ultrasound qualification in the areas of practice being studied by the student or trainee. It is advisable that the practice educator/mentor/clinical supervisor has a minimum of two years current clinical experience. An enthusiasm and ability to teach are essential qualities of a good practice educator/mentor/clinical supervisor which, coupled with knowledge and expertise, are as important as the length of experience. The named practice educator/mentor/clinical supervisor is responsible for liaising with the education provider on issues relating to training. The practice educator/mentor/clinical supervisor fulfils the role of internal assessor for both formative and summative clinical assessments and liaises with the academic team and clinical training co-ordinator regarding any targeted interventions that need to be put in place to ensure that students are ready to undertake the summative clinical assessment by the programme/course submission date.

- **Clinical Training Co-ordinator**

A named individual, within the clinical department, who co-ordinates the training of a student or trainee to ensure there is a supportive environment in which they can develop the required range of clinical skills. This individual may not necessarily be involved in the clinical training of a student or trainee but, in addition to their co-ordination role, acts in a supportive, pastoral capacity for the student or trainee and provides support for the clinical supervisor/mentor/clinical supervisor.

This role may also include involvement in the accreditation process of the clinical department by the training centre. Clinical training co-ordinators may be identified as relevant to some programmes/courses to ensure that equivalent standards of clinical experience are offered to all students irrespective of their clinical skills placement.

- **External Assessor / External Moderator / Independent Assessor**

This role is usually fulfilled by an external, independent person who ensures unbiased clinical competency assessments are carried out. This person may be known as a verifier by some training centres. This would normally be an individual nominated by the training provider, working independently from the student or trainee's clinical placement, who moderates the final summative clinical competency assessment with the internal assessor. To ensure rigorous and equitable assessment of the students'/trainees' clinical abilities, protection of the public and reduce bias, CASE expects all programme/course summative clinical assessments to be moderated by an external assessor/moderator/independent assessor who is not directly responsible for the students' training.

The external assessor/moderator/independent assessor should be a senior professional with appropriate experience who is able to demonstrate on-going continual professional development (CPD) relevant to the area(s) of practice they are assessing. As the role involves ensuring appropriate standards are consistently met, it is advisable for the external assessor/moderator/independent assessor to have a minimum of three years clinical experience, plus appropriate training in relation to the summative assessment process.

The external assessor/moderator/independent assessor should be carefully chosen to ensure extensive experience in their field of practice, with a good knowledge of current clinical practice, and academic and clinical standards, to provide a supportive, fair and unbiased summative assessment. Regular assessor training or updates, along with clear assessment guidelines, should be used by the education and training provider to ensure consistency of assessment. Moderation of new external assessors/moderators/independent assessors is advisable to ensure consistency.

- **Student / Trainee**

An individual who is learning ultrasound in any capacity i.e. someone learning ultrasound for the first time or extending their scope of ultrasound practice.

6.2 Academic Learning Environment

The academic learning environment may refer to an actual or virtual classroom. CASE strongly recommends that:

- Suitable accommodation is available for the delivery of lectures, skills workshops, group sessions and tutorials for the anticipated maximum number of students;
- Appropriate simulators are available within a simulation suite;

- Suitable audio-visual and information technology equipment is available for delivery of the programme/course, both at the learning centre and clinical placements;
- A virtual learning environment is available for those students who are remote from the classroom environment;
- Library facilities are available to support ultrasound students working at undergraduate level.

6.3 Clinical Skills Placements

A Clinical Skills Placement is a provider of high-quality medical ultrasound education and training which undertakes medical ultrasound examinations that reflect the current evidence base and are appropriate to the student's academic and clinical needs. Its staff, in particular those who undertake the role of practice educator, mentor or clinical supervisor to support students and trainees, must be committed to the programme or course philosophy.

It is the responsibility of the programme/course team to determine the suitability of clinical departments for clinical skills training. This may be achieved by auditing proposed clinical placements as part of the admissions process (Appendix 7) and/or by carrying out site visits.

CASE expects education and training providers to have a robust mechanism in place to assess the clinical placement site prior to enrolling a student or trainee onto the programme/ course, and to monitor the site throughout the duration of the programme/course. This is to ensure that students or trainees will have access to:

- A wide range of examinations relevant to the areas of clinical practice;
- Protected, supervised hands-on scanning time for the duration of the award. Until the final Programme award is ratified, the trainee remains a student of the university, and an appropriate level of supervision (commensurate with their ability) must continue to remain in place in line with university, CASE, BMUS and any other relevant United Kingdom (UK) professional body guidelines;
- An appropriate number of suitably qualified staff to support them within the department;
- Tutoring from experienced professionals;
- A supportive learning environment;
- A clinical learning experience supported by evidence-based protocols and adhering to national/international recommendations where these exist.

Clinical placement decisions should be based on the ability of the clinical site to provide appropriate evidence-based training. In order to achieve appropriate clinical competency, a

student or trainee needs access to high-quality hands-on supervised experience within the clinical department. Students/trainees **must not** scan and report independently until they have achieved formal clinical competency i.e. have successfully completed their summative assessments and received their ratified award for that clinical area of practice. Dedicated training lists should, therefore, be incorporated into the department's work schedule, in order to provide protected hands-on time for student learning with the clinical supervisor/mentor/practice educator.

The guidance on minimum requirements and mentoring will vary slightly for programmes/courses due to the variability of workload, the nature of the examinations and the opportunities to undertake scans. Education and training providers will need to provide robust evidence of progress monitoring, the quality of mentoring and clinical competency assessment during the accreditation process. As this relates to the acquisition of the required clinical competencies, CASE strongly recommends that students attain a minimum of 90% clinical attendance. In order to ensure patient safety, no student/trainee should be taking full responsibility for an ultrasound examination until they have received their ratified award. Direct supervision is essential during the learning process for any CASE accredited award.

In order to maintain sustainability of the programme/course, CASE strongly recommends that formal, rolling Service Level Agreements (SLAs) are in place with NHS Trusts to ensure the agreed number of clinical placements are provided for current students to enable them to complete the programme/course. Private, Independent and Voluntary Organisations (PIVO) offering Clinical Placements for students on the programme course require PIVO Service Level Agreements.

The SLAs set up between the education/training provider and the NHS Trusts/PIVOs provide evidence of the agreed clinical training and assessment in accordance with the accredited procedures and expectations of the programme/course. The education and training provider will be responsible for providing mentor and assessor training. In addition, it is recommended that institutions or programme/course faculties retain a register of appropriately trained staff participating in the mentoring and assessment scheme.

CASE will expect, both in documentation and during scheduled visits to placements, a clear demonstration of the quality, nature and range of clinical facilities, including equipment and staffing, necessary to support the students/trainees in their clinical education and practice. For example, CASE will expect to see evidence that students/trainees are able to take part in appropriate, dedicated training lists throughout the duration of the programme/course. There should also be:

- Clear evidence of co-operation strategies between the academic and clinical teaching teams;
- A defined strategy for the selection, training and provision of support mechanisms for practice educators and mentors;
- Evidence that the external/independent assessor is familiar with medical ultrasound practice in a wide range of healthcare situations, the students who access the programme/course and its methods of clinical training and assessment;
- Evidence that the teaching teams, practice educators/mentors/clinical supervisors are undertaking appropriate continuing professional development (CPD) as defined by the relevant professional bodies.

7. Quality Assurance Procedures

It is expected that programmes/courses will be subject to the formal quality assurance processes of the HEI or training centre providing the programme/course. This will include, for example, adherence to admissions and assessment policies/procedures, external scrutiny by an appropriately qualified External Examiner and completion of an internal Annual Programme Monitoring and Review report. CASE requires that the External Examiner holds a postgraduate ultrasound qualification or Diploma in Medical Ultrasound (DMU) or equivalent and has at least two years appropriate clinical experience.

7.1 CASE Programme/Course Monitoring

CASE believes that Annual Programme Monitoring and Review reports (APMRs) act as a valuable source of qualitative and quantitative information regarding the design, development, monitoring and evaluation of programmes/courses. This evidence complements the factual information available through definitive programme/course documentation. APMR data may be used by CASE to provide an overview of standards being achieved, changing patterns of curricular provision and innovative practices.

Each autumn, institutions are required, as a condition of ongoing CASE accreditation, to send an annual report of their programme/course's recruitment, student outcomes and challenges to CASE using an electronic pro-forma.

The CASE APMR working group reviews the returns during the autumn semester and compiles an overall annual report for discussion at the spring CASE Committee meeting. The APMR Lead will contact individual institutions if any clarity or additional APMR information is required. CASE reserves the right to nominate a representative to visit institutions or

programme/course faculties to fulfil its monitoring role. Each institution will ultimately receive a letter from the CASE APMR Lead regarding the satisfactory nature of their APMR report. Receipt and approval of the APMR report will be necessary for retention on the public CASE Directory of Accredited Courses.

Changes to programmes/courses that are necessary between review periods normally need CASE approval. Where approval for a change has been given by CASE, or a minor modification has been made, these should be clearly identified in the next CASE monitoring exercise return.

8. Accreditation Fees for Part-time Programmes/Courses

The current fees in force, including penalty fees, may be found on the CASE website at: https://www.case-uk.org/for-heis/accreditation-fees/

In addition, if a site visit is required, all costs shall be met by the education and training provider.

9. Frequently Asked Questions

Does the Course Leader need to have a postgraduate ultrasound qualification?

Yes. CASE requires that the Course Leader, or Deputy, holds a postgraduate ultrasound qualification or Diploma in Medical Ultrasound (DMU) and has at least two years appropriate clinical experience.

Do all members of the academic teaching team need to have a postgraduate ultrasound qualification?

No. CASE recommends that at least one other member of the academic teaching team holds an ultrasound qualification and has had relevant clinical experience.

Do members of the academic teaching team have to provide all of the necessary clinical expertise?

No. The relevant expertise, for full course delivery, should ideally be held across members of the Course Team; however, where specialist expertise is needed, relevant external/associate/sessional lecturers should be sourced from outside the institution.

Do all members of the academic teaching team need to have clinical currency?

No. CASE recommends that at least one member of the academic teaching team holds an ultrasound qualification and has an honorary or permanent contract with a local department in order to be able to regularly participate in ultrasound sessions.

Does the External Examiner need to have a postgraduate ultrasound qualification?

Yes. CASE requires that the External Examiner holds a postgraduate ultrasound qualification or Diploma in Medical Ultrasound (DMU) and has at least two years appropriate clinical experience.

What qualifications and experience are necessary to become a practice educator, a mentor or a clinical supervisor?

Student scans must be directly supervised by an appropriate practice educator/mentor/clinical supervisor who has appropriate qualifications and experience (i.e. PgC qualification and a minimum of 2-year post-qualification experience or level 2 Radiology), aligned with the student's breadth/remit of practice, as defined in their portfolio. Where there is a significant shortage of available practice educators/mentors/clinical supervisors, qualified staff with a minimum of 1-year post-qualification experience may act as the local practice educator/mentor/clinical supervisor if at least one other member of the supervisory team meets the minimum requirement of 2 years' experience.

What qualifications and experience are necessary to become an external assessor, moderator or independent assessor?

The external assessor/moderator/independent assessor should be a senior professional with appropriate experience who is able to demonstrate on-going continual professional development (CPD) relevant to the area(s) of practice they are assessing. As the role involves ensuring appropriate standards are consistently met, it is advisable for the external assessor/moderator/independent assessor to have a minimum of three years clinical experience, plus appropriate training in relation to the summative assessment process.

Does a formal clinical assessment need to be included as part of the course?

Yes. CASE will not accredit Programmes/Courses that do not include a record of formative development and a formal endpoint assessment of clinical competence to practice. Theory-based short courses lasting from one to a few days are not eligible for CASE accreditation but may apply directly for individual professional body endorsement.

How many clinical assessors are required when carrying out a summative clinical assessment?

Two internal clinical assessors are required for every summative clinical **assessment**. For first attempts, one **MUST** be the student's practice educator/mentor/clinical supervisor and the other must be a suitably qualified independent assessor who has not been heavily involved in the training of that student.

How many clinical assessors are required when carrying out a summative clinical reassessment?

For every summative clinical **re-assessment**, two assessors are required. One **MUST** be the student's practice educator/mentor/clinical supervisor and the other may be a member of the academic team staff or a trained assessor acting as a representative of the education provider. Both of these individuals must be qualified in the clinical application of ultrasound being studied/assessed.

Can simulation be used in isolation for summative clinical assessments?

No. Simulators provide a tool for giving feedback to the trainee during formative training and may also have a limited role within a summative assessment; however, this should not substitute assessment in a real clinical situation that would include patient interaction, scanning, management of machine set-up and reporting.

Do summative clinical assessments have to be pass/fail?

Yes. CASE requires that clinical assessments must carry a Pass or Fail criterion, where Pass is a minimum standard that is equivalent to safe practice or baseline clinical competence.

Is external moderation of clinical assessments necessary?

Yes. The Programme/Course Team or Faculty need to demonstrate how external moderation will be applied for ensuring consistency of clinical assessments across different clinical departments.

How many assessment attempts can each student have?

CASE permits two attempts at each assessment (a first attempt and one reassessment).

Is the use of compensation or condonement permitted?

No. CASE does not permit the use of compensation or condonement in relation to failed modules or elements of assessment; all assessments must be passed.

Are students qualifying from the Programme/Course CASE-Accredited?

No. The education provider is accredited by CASE to deliver the Programme/Course and issue appropriate award certificates and/or credits. Personal accreditation of an individual's ultrasound practice is not a process that falls within the remit of CASE.

How long does CASE accreditation for a Programme/Course last?

CASE accreditation for a Programme/Course will normally be for five years.

Why is it necessary for the Programme/Course Lead to complete and submit an APMR?

Receipt and approval of the APMR report is a CASE requirement for retention on the public CASE Directory of Accredited Courses.

Appendix 1: CASE Learning Outcomes for Academic Levels 6 and 7

The learning outcomes are designed to support course teams in developing courses to meet CASE requirements and assist clinical departments determine the level of working for staff at these academic levels.

CASE Learning Outcomes	
Level 6	**Level 7**
Core Skills	
HCPC Standards of Proficiency should be adapted for ultrasound and mapped to the programme and module learning outcomes (Appendix 4) http://www.hcpc-uk.org/publications/standards/index.asp?id=51	Core skills are expected, as part of the original qualification in health care for those progressing from a healthcare profession background
Consideration of graduate attributes should be evident within the programme	Consideration of post-graduate attributes should be evident within the programme
Clinical Education	
Carry out a medical ultrasound examination, interpret and analyse scan findings under appropriate supervision, within a defined scope of practice, safely and competently. Produce written reports, within a focused scope of practice, for ultrasound examinations undertaken	Carry out and supervise a range of complex medical ultrasound examinations and other appropriate actions, including interpretative reporting safely, competently and independently. Provide appropriate supervision, mentorship and leadership for less experienced colleagues
Critically relate theory to practice in the clinical setting and nationally in order to contribute to patient diagnosis and management	Critically relate theory to practice in the clinical setting and nationally in order to contribute to patient diagnosis, management and service delivery
Recognise the limitations of practice and the need to consult other senior colleagues. Identify sources with whom to consult in order to influence patient management	Recognise the limitations of practice and the need to consult other senior colleagues. Identify sources with whom to consult in order to influence patient management and change practice. Engage in audit and research, present findings and make recommendations as appropriate
Critically reflect on self to demonstrate continuing professional development within clinical practice	Critically reflect on self to demonstrate continuing professional development within clinical practice and assist others in developing skills locally and nationally
Function independently and as part of a team with critical awareness of scope i.e. extent and limitations of practice	Function independently and as part of a team, whilst developing collaborations and engaging in inter-professional team working, education and research
Enhance the service by engaging with service users and carers to promote and improve patient- centred care	Demonstrate originality and self- direction in tackling and solving problems, and engaging service users to promote patient-centred care

Science and Technology	
Demonstrate and apply a systematic knowledge and understanding of the physical and technological principles and processes of diagnostic ultrasound, describing their relevance to the ultrasound image and the equipment utilised	Demonstrate and apply a systematic and thorough knowledge and understanding of the physical and technological principles and processes of diagnostic ultrasound and show a comprehensive understanding of their relevance to the ultrasound image and the equipment utilised
Deploy appropriate techniques to effectively produce diagnostic ultrasound images and spectra, ensuring image quality is optimised and exposure to ultrasound is minimised according to clinical need	Deploy appropriate advanced techniques to effectively produce diagnostic ultrasound images and spectra, ensuring image quality is optimised and exposure to ultrasound is minimised according to clinical need. Critically evaluate images within a wide range of complex clinical settings, implement new technology and support colleagues in the use of advanced techniques
Demonstrate proficiency in recording ultrasound images and Doppler outputs	Demonstrate proficiency in recording ultrasound images and Doppler outputs, evidencing a comprehensive understanding of the findings in relation to clinical practice
Critically evaluate and discuss the safety issues related to diagnostic ultrasound to enable optimal use of the equipment within the current, internationally recognised recommendations for safe practice, actively reducing any hazard to patients and staff	Critically evaluate, analyse and debate the safety issues related to diagnostic ultrasound to enable optimal use of the equipment within the current, internationally recognised recommendations for safe practice, actively reducing any hazard to patients and staff
Deploy accurately established techniques of analysis and enquiry to evaluate the role of current ultrasound equipment, latest technology and associated quality assurance procedures for pertinent use to assist in the selection of new machines	Critically appraise current ultrasound equipment, latest technology and associated quality assurance procedures for pertinent use to identify and select new machines
Demonstrate a systematic understanding of graphical and numerical data commensurate with ultrasound practice	Develop a comprehensive understanding and utilise graphical and numerical data commensurate with ultrasound practice
Demonstrate awareness of the principles of Artificial Intelligence (AI) and deep learning technology, and its application to practice. This includes having an understanding of the sonographer's legal, ethical and moral duties when using AI	Demonstrate a critical awareness of the principles of AI and deep learning technology, and its development and application to practice. This includes having an understanding of the sonographer's legal, ethical and moral duties when using AI
Professional Issues	
Critically evaluate the emotional impact of the ultrasound examination on the client, carers and relevant healthcare professionals and meet HCPC core proficiencies	Critically evaluate the emotional impact of the ultrasound examination on the client, carers and relevant healthcare professionals. Demonstrate a critical awareness of clinical problems and identify potential solutions
Devise and sustain arguments relating to national and local legal, ethical, professional and organisational principles that underpin diagnostic ultrasound practice	Critically analyse international, national and local legal, ethical, professional and organisational principles that underpin diagnostic ultrasound practice and assist in the leadership of change
Demonstrate a conceptual understanding of the changing national and local health care needs of clients, patients, carers and organisations	Critically discuss the changing national and local healthcare needs of clients, patients, carers and organisations. Suggest improvements and ways to implement change

Professional Issues (cont.)	
Identify qualitatively and quantitatively the limitations and constraints associated with ultrasound imaging	Critically evaluate qualitatively and quantitatively the limitations and constraints associated with ultrasound imaging and suggest alternative solutions to improve service provision
Demonstrate a systematic understanding of the need for life-long learning in medical ultrasound practice	Evaluate the need for life-long learning in medical ultrasound practice. Relate this to the development of self and others
Develop negotiation and time management skills to achieve the core knowledge, skills and clinical practice learning outcomes for your level of practice. Mentor and teach others	Develop negotiation and time management skills to advance knowledge, skills and clinical practice to a higher level. Mentor and teach learners, support staff and other professionals through the development of relevant learning materials
Critically reflect on the leadership roles needed within practice and personal contributions to leadership	Critically evaluate arguments and assumptions relating to the leadership roles needed within practice and develop leadership roles within the clinical setting and at a national level. Lead a team to ensure workload is delivered effectively
Have due regard to patients' health status and co-morbidities, promoting healthy living	Develop, implement and review pathways of care, having regard to patients' health status and co-morbidities, promoting healthy living
Critically evaluate the effectiveness of quality assurance procedures and engage in quality monitoring within the clinical setting	Critically evaluate the effectiveness of quality assurance procedures and quality management systems. Lead on local quality delivery management and implement change as required
Clinical Topic	
Identify, evaluate and interpret normal and abnormal anatomy and pathophysiology relevant to the level and scope of clinical practice	Identify, evaluate and interpret normal and abnormal anatomy and pathophysiology relevant to advanced clinical practice. Assess patients and make reasoned decisions to initiate, continue, modify, suspend or cease ultrasound imaging examinations
Synthesise and apply scientific, ergonomic and safety principles in order to identify, select and manipulate equipment	Critically synthesise and apply scientific, ergonomic and safety principles in order to identify, select and manipulate equipment
Show a systematic understanding of and utilise all information from various sources to ensure the most appropriate examination is undertaken	Critically appraise and utilise all information from various sources to ensure the most appropriate examination is undertaken
Analyse the needs of the patient to perform all aspects of the ultrasound examination safely and competently	Analyse the needs of the patient to perform all aspects of the ultrasound examination safely and competently, adapting to challenging circumstances
Competently carry out ultrasound examinations and provide a report according to the evidence base, demonstrating an awareness of limitations within scope of practice	Competently carry out and independently report ultrasound examinations according to the evidence base, demonstrating an awareness of limitations within scope of practice
Evaluate the ultrasound findings and, where necessary, arrange for a second opinion and/or arrange further investigations, following appropriate consultation, in line with local policies and practices	Critically evaluate the ultrasound findings and, where necessary, arrange, advise or undertake further investigations, following appropriate consultation, in line with local policies and practices. Provide support for less experienced staff

Clinical Topic (cont.)	
Actively demonstrate proficiency in the interpretation and analysis of ultrasound appearances of organs and structures to reflect the clinical question raised and show an awareness of the limitations of level of competence. Provide a report with appropriate supervision	Actively demonstrate proficiency in providing interpretative reports for ultrasound examinations to reflect the clinical question raised. Provide support for less experienced staff
Communicate clearly, effectively and appropriately with patients, carers and other healthcare professionals	Communicate clearly, effectively and appropriately with patients, carers and other healthcare professionals in challenging situations. Support on-going development of communication to improve service provision
Demonstrate an understanding of the principles of problem solving within the ultrasound profession in order to resolve issues in practice and service delivery	Demonstrate a comprehensive knowledge and application of the principles of problem solving within the ultrasound profession in order to resolve issues in practice and service delivery
Contribute to case management and service delivery by discussion and debate about patient diagnosis and prognosis	Contribute to case management and service delivery by discussion and debate at all levels in patient diagnosis, prognosis and management
Reflect on personal and professional practice in order to challenge, develop, maintain and enhance local professional standards in clinical ultrasound	Critically reflect on personal and professional practice in order to challenge, develop, maintain and enhance local and national professional standards in clinical ultrasound
Scope of Practice	
Demonstrate an awareness of how to take practitioner level skills to the next level, providing clear goals to work towards independent interpretative reporting practice	Demonstrate independent interpretative clinical reporting practice and show systematic and creative evidence of how the other domains of advanced practice are being used in the development of the profession
Apply methods and techniques to review, consolidate, extend and apply knowledge and understanding of ultrasound. Initiate and carry out projects to improve the service locally	Deal with complex ultrasound issues both systematically and creatively, make sound judgements and communicate conclusions clearly to specialist and non-specialist audiences
Synthesise, appraise and evaluate theory and research relevant to ultrasound practice in order to improve patient care. Judge the reliability, validity and significance of evidence to support conclusions and/or recommendations. Suggest reasons for contradictory data/results	Synthesise, appraise and critically evaluate complex theory and research relevant to advanced ultrasound practice in order to improve patient care and inform future practice and the profession. Judge the appropriateness of the methodologies used. Recognise and argue for alternative approaches
Develop and enhance skills in critical reflection and evaluation of theoretical concepts in order to inform and enhance personal learning and professional medical ultrasound practice	Show comprehensive understanding and critical reflection and evaluation of theoretical concepts in order to inform and enhance personal learning and professional medical ultrasound practice
Apply the methods and techniques learnt to assist with research projects and audit	Undertake research studies as part of a research team and present the findings locally and nationally. Autonomously plan and implement clinical audits
Plan, negotiate and manage own learning whilst developing a team approach in support of self-directed learning	Plan, negotiate and manage own learning whilst demonstrating a team approach in support of self-directed learning. Support and implement local and / or national level learning initiatives

Appendix 2: Documentation Requirements for Part-Time Programmes/Courses Accreditation / Reaccreditation

Please complete and submit this form to highlight which document and which section to find the relevant information. Try to be as specific as possible, so that your documents can be reviewed in a timely manner. Missing information or lack of clarity may lead to delays in your accreditation.

Documentation required	**Provided (if not, justify why). N.B. may cause delay**		**Detail where the evidence is located (document / section / page)**
	Yes	**No**	
Programme/Course Outline and Documentation			
Programme/Course title includes the word 'ultrasound'	☐	☐	
Rationale for the development of the Programme/Course	☐	☐	
Business Case / Viability of the Focused Course			
Minimum / maximum numbers	☐	☐	
Senior management support	☐	☐	
Support from clinical partners	☐	☐	
Other facilities for clinical skills	☐	☐	
Programme/Course Development			
Documentation of internal Quality & Standards Programme/Course development meetings	☐	☐	
Programme/Course Specification			
Programme/Course academic level(s)	☐	☐	
Part-time and/or full-time	☐	☐	
Minimum and maximum time for completion of Programme/Course	☐	☐	
Target Programme/Course attendants	☐	☐	
English language requirements	☐	☐	
Clinical Placement (applicants must have identified and secured a clinical placement prior to being accepted onto the programme/course)	☐	☐	
Number of credits (if any)	☐	☐	
Programme/Course title and code	☐	☐	
Learning outcomes (LOs) *(must be relevant to CASE LOs)*	☐	☐	
Assessments and weighting	☐	☐	
Indicative content	☐	☐	
Student Handbook *Student-focused with clearly defined student journey*	☐	☐	

Mapping (*All Programmes/ Courses must be mapped against the relevant standards in the CASE document 'Standards for Sonographic Education').* These will be reviewed in detail and should show how CASE learning outcomes are met within the Programme/ Course.			
Learning Outcomes (LOs) mapped to CASE LOs for the academic level of the Programme/Course	☐	☐	
Skills for Health Occupational Standards	☐	☐	
Quality Provision and Review			
External Examiner details *Must have recognised ultrasound qualification + current ultrasound education and / or clinical experience*	☐	☐	Name: Email address: Workplace:
Critical review of Programme/ Course and alignment with national trends in ultrasound education	☐	☐	
Programme Team Experience and Range of Expertise			
Number of academic staff	☐	☐	
Staff/student ratio	☐	☐	
AdvanceHE fellowship / teaching qualifications of staff	☐	☐	
Staff CVs	☐	☐	
Guest lecturer / associate lecturer / visiting lecturer use	☐	☐	
Monitoring of teaching quality	☐	☐	
Administrative support	☐	☐	
Admissions Process and Induction			
Entry criteria	☐	☐	
Selection process	☐	☐	
How are core skills identified? *e.g. values-based recruitment, respect and dignity, team working, the 6Cs*	☐	☐	
Who is involved in the recruitment process?	☐	☐	
Are overseas applications accepted?	☐	☐	
Recognition of Prior Learning policy and procedure	☐	☐	
How will occupational health clearance, DBS, mandatory training, uniforms and clinical placements be managed?	☐	☒	
Is it clear what students will be expected to pay for during the course? *e.g. DBS, uniforms, travel, books, etc.*	☐	☐	

Admissions Process and Induction (cont.)			
Are extended days used? If so, how are applicants made aware of this?	☐	☐	
Is there a uniform policy?	☐	☐	
If a pre-application visit to a clinical department is required, documentation for clinical staff to provide feedback to the education provider.	☐	☐	n/a ☐
Programme/Course induction	☐	☐	
Curriculum			
Programme/ Course delivery pattern	☐	☐	
Draft timetable	☐	☐	
Learning and teaching strategy	☐	☐	
Integration of academic education and clinical practice	☐	☐	
Curriculum content	☐	☐	
Assessment strategy and details *e.g. timing of assessments, range of assessments, formative assessments, feedback and feed-forward opportunities*	☐	☐	
Interprofessional learning opportunities	☐	☐	
Mechanisms for supporting students from diverse backgrounds / assessing initial learning needs *(dependent on student's background knowledge and experience)*	☐	☐	n/a ☐
Generic topics *e.g. library skills, academic skills, communication, cultural competence, equality and diversity, professionalism*	☐	☐	
Programme/Course reading list	☐	☐	
Educational innovations or resources used	☐	☐	
Student Support			
Academic support mechanisms	☐	☐	
Support for additional learning needs	☐	☐	
Identification of failing students / cause for concern process	☐	☐	
Process for supporting students and dealing with fitness to practise, professionalism, placement issues, etc	☐	☐	
Appeals processes	☐	☐	

Clinical			
How clinical departments are selected	☐	☐	
Clinical placement requirements	☐	☐	
What are the intended clinical placement hours per year?	☐	☐	
Is funding available for placements? *(placement tariff)*	☐	☐	
If overseas applicants are accepted, what processes are in place to ensure parity of provision / quality of clinical education?	☐	☐	n/a ☐
Formal relationship agreements between clinical site and education provider	☐	☐	
Student support on placement	☐	☐	
Simulation or other opportunities for students to learn basic clinical skills	☐	☐	
Practice educators: Selection, training, monitoring, communication	☐	☐	
Independent assessors: Selection, training, monitoring, communication	☐	☐	
How consistency of learning experience is monitored	☐	☐	
Proportion of time on clinical placements	☐	☐	
Minimum clinical attendance	☐	☐	n/a ☐
Formative monitoring of clinical progress	☐	☐	
How clinical skills development is achieved throughout the Programme/ Course	☐	☐	n/a ☐
Summative Clinical Assessments			
Assessment process *(including who, when, where and documentation used)*	☐	☐	
Number of cases examined?	☐	☐	
Range of cases examined?	☐	☐	
Moderation process	☐	☐	
Resit assessment process	☐	☐	

Appendix 3: Course mapping to National Occupational Standards

Ultrasound Imaging CI.C.2019

All programme/ course accreditations need to include mapping to the National Occupational Standards CI.C.2019, as these are the minimum standards of anyone performing ultrasound at all levels. If the course includes interventional procedures the mapping for CI.I (see section 10.4.2) is also required.

A word template is available for the CI.C mapping. The module headings should be replaced with the programme/course title. If any aspects are not applicable to your programme/ course, justification should be provided.

CI.C.2019 - Perform, interpret and report on ultrasound examinations	**Mapping to Programme/Course Aims & Learning Outcomes**
Knowledge and Understanding	
1. legal, organisational and policy requirements relevant to your role, the role of others in your organisation and the activities being carried out	
2. the relevant national and local standards, guidelines, policies and procedures that are available and how and when they should be accessed	
3. the importance of respecting individuals' culture, privacy, dignity, wishes, beliefs and decisions and how to do so	
4. the limitations of your own knowledge and experience and the importance of operating within your scope of practice	
5. preparation of the environment and equipment for ultrasound examinations	
6. local policy and protocol for arranging and working with a chaperone	
7. the physical processes involved in the production of an ultrasound image	
8. the biological effects and potential risks associated with the use of ultrasound	

9. the principles and applied knowledge of the Doppler effect and its clinical application in imaging and diagnosis	
10. artefacts on images - their causes, value, limitations and minimisation strategies	
11. the effect of sound propagation through different tissues	
12. techniques to optimise the ultrasound image including position and preparation of the individual	
13. the safe operation of ultrasound equipment	
14. the potential for work-related disorders and how to minimise the risk	
15. the importance of timely equipment fault recognition and local procedures for reporting these	
16. image capture and recording devices	
17. equipment age and capabilities, limitations and routine maintenance, including the quality control processes required by the operator	
18. the function, specification and performance characteristics of ultrasound equipment and transducers	
19. the clinical conditions appropriate for ultrasound examinations and the implications of other disease processes relevant to the area of study	
20. the clinical justification of the examination request and an understanding of limitations	
21. the contraindications associated with each investigation and the implications of proceeding with due consideration of related risks	
22. the clinical implications of any allergy relevant to the examination	
23. the importance of obtaining valid consent in line with national and local guidelines	
24. methods of communicating difficult and complex information to individuals and key people	

25. the importance of providing individuals and key people with opportunities to ask questions and increase their understanding	
26. the information that should be given to individuals before, during and on completion of the examination	
27. how to adapt communication styles, ask questions, and listen carefully in ways which are appropriate for the needs of the individual	
28. normal anatomy and physiology, normal variants and anatomical relationships demonstrable by ultrasound including knowledge of normal measurements and predisposing factors of the individual	
29. how to acquire the best possible diagnostic images for a range of type and size of individual	
30. recognition of abnormal anatomy and physiology demonstrable by ultrasound and the significance of such abnormality	
31. the pathological processes and their appearance on ultrasound, relevant to the examination undertaken	
32. manifestations of an individual's physical and emotional status	
33. the impact of equipment controls on image quality and production, and safety indices	
34. local procedures pertaining to the examination report	
35. report writing techniques including medical terminology and standard abbreviations relevant to the examination	
36. alternative imaging examinations, diagnostic and interventional techniques, and other relevant investigations	
37. referral pathways, follow-up procedures and support resources for the individual	
38. procedures relating to recording, collating and preparing appropriate information, documentation and images for transfer or storage according to local protocols	
39. how to keep full, accurate and clear records in line with organisational procedures	

Performance criteria	
1. apply standard precautions for infection prevention and control, and other appropriate health and safety measures	
2. ensure all necessary preparations have been made by the individual and staff before starting the procedure	
3. check and prepare the equipment required for the examination	
4. ensure the environment is conducive to maintaining the privacy and dignity of the individual	
5. check the identification and clinical history details before commencing the procedure in accordance with local policies and procedures	
6. introduce yourself and other members of staff present during the examination	
7. review any previous relevant imaging where available	
8. enter the identification details of the individual into the ultrasound machine or, if previously entered, check for accuracy	
9. obtain valid consent for the procedure in accordance with national and local guidelines	
10. respect the individual's privacy, dignity, beliefs and decisions	
11. confirm the appropriateness of key people before the examination in accordance with local guidelines	
12. communicate with the individual / key people to facilitate their understanding of and co-operation with the examination	
13. establish the individual's capacity to understand the procedure with the help of key people if necessary	
14. clearly explain the procedure and possible outcomes, including risk, benefits and limitations	

15. check for any contraindications for the proposed procedure and take appropriate action in response to identified risks	
16. ensure the individual is in an appropriate and comfortable position for the examination, ensuring clothing is suitably adjusted to facilitate the examination	
17. select and prepare the appropriate imaging technique, transducer and initial scanning parameters for the individual and the site under examination	
18. apply sufficient acoustic coupling gel to the area to be examined to ensure optimal sound transmission	
19. make adjustments to the equipment controls to optimise the image quality and recognise the appearance of ultrasound artefacts	
20. ensure power levels and insonation time are kept to a minimum in accordance with national and international safety guidelines	
21. acquire and interpret appropriate ultrasound images and produce a report in accordance with your scope of practice and in-line with national and local guidelines and protocols	
22. observe and be aware of the individual's condition and well-being at all times and take appropriate action in response to any signs of discomfort and/or distress	
23. take appropriate steps to minimise the risk of work-related disorders	
24. maintain communication with the individual / key people throughout the procedure	
25. record images with appropriate annotation and measurements according to national and local guidelines and protocols	
26. extend the procedure as appropriate to confirm or supplement any initial findings	

27. seek advice from appropriate others where you observe unexpected appearances or unusual findings that are outside your area of personal competence	
28. provide the individual with information relating to the procedure and aftercare where necessary	
29. explain the process for obtaining results	
30. advise a referral to the appropriate person if an abnormality is observed which is likely to require further investigation or treatment, following national and local guidelines and protocols	
31. record, collate and prepare appropriate information, documentation and images for transfer or storage according to local protocols	
32. verify that the images have arrived/been stored according to local protocols	

Reference:

1. Skills for Health (2019) CI.C.2019 - Perform, interpret and report on ultrasound examinations. [Online]. Available : https://tools.skillsforhealth.org.uk/competence/show/html/id/4302/

Appendix 4: Standards of Proficiency for Sonographers

These standards are based on the HCPC standards of proficiency for a Radiographer[21]. Some aspects have been amended to relate to ultrasound practice, where relevant.

Mapping to these Standards should be completed for any programme offering direct entry ultrasound education, which enables non-registered health care professionals to enter the sonography workforce.

Standard of proficiency	**Mapping to programme and module aims and learning outcomes**
Sonographers must:	
1. be able to practise safely and effectively within their scope of practice	
1.1 identify the limits of their practice and when to seek advice or refer to another professional or service	
1.2 recognise the need to manage their own workload and resources safely and effectively, including managing the emotional burden that comes with working in a pressured environment	
1.3 keep their skills and knowledge up to date and understand the importance of continuing professional development throughout their career	
2. practise within the legal and ethical boundaries of their profession	
2.1 maintain high standards of personal and professional conduct	
2.2 promote and protect the service user's interests at all times	
2.3 understand the importance of safeguarding by actively looking for signs of abuse, demonstrating understanding of relevant safeguarding processes, and engaging in these processes where necessary	
2.4 understand what is required of them by the Health and Care Professions Council, including but not limited to the Standards of conduct, performance and ethics	

Standard of proficiency	**Mapping to programme and module aims and learning outcomes**
2.5 respect and uphold the rights, dignity, values, and autonomy of service users, including their role in the assessment, diagnostic and / or therapeutic process	
2.6 recognise that relationships with service users, carers and others should be based on mutual respect and trust, maintaining high standards of care in all circumstances	
2.7 understand the importance of and be able to obtain valid consent, which is voluntary and informed, has due regard to capacity, is proportionate to the circumstances and is appropriately documented	
2.8 understand the importance of capacity in the context of delivering care and treatment	
2.9 understand the scope of a professional duty of care, and exercise that duty	
2.10 understand and apply legislation, policies and guidance relevant to their profession and scope of practice	
2.11 recognise the power imbalance which comes with being a health care professional, and ensure they do not abuse this for personal gain	
2.12 understand the legislative, policy, ethical and research frameworks that underpin, inform and influence the practice of radiography	
3. look after their health and wellbeing, seeking appropriate support where necessary	
3.1 identify anxiety and stress in themselves and recognise the potential impact on their practice	
3.2 understand the importance of their own mental and physical health and wellbeing strategies in maintaining fitness to practise	

Standard of proficiency	**Mapping to programme and module aims and learning outcomes**
3.3 understand how to take appropriate action if their health may affect their ability to practise safely and effectively, including seeking help and support when necessary	
3.4 develop and adopt clear strategies for physical and mental self-care and self-awareness, to maintain a high standard of professional effectiveness and a safe working environment	
4. practise as an autonomous professional, exercising their own professional judgement	
4.1 recognise that they are personally responsible for and must be able to justify their decisions and actions	
4.2 use their skills, knowledge and experience, and the information available to them, to make informed decisions and / or take action where necessary	
4.3 make reasoned decisions to initiate, continue, modify or cease treatment or the use of techniques or procedures, and record the decisions and reasoning appropriately	
4.4 make and receive appropriate referrals, where necessary	
4.5 exercise personal initiative	
4.6 demonstrate a logical and systematic approach to problem solving	
4.7 use research, reasoning and problem-solving skills when determining appropriate actions	
4.8 understand the need for active participation in training, supervision and mentoring in supporting high standards of practice, and personal and professional conduct, and the importance of demonstrating this in practice	
5. recognise the impact of culture, equality and diversity on practice and practise in a non-discriminatory and inclusive manner	
5.1 respond appropriately to the needs of all different groups and individuals in practice, recognising this can be affected by difference of any kind including, but not limited to, protected characteristics,[1] intersectional experiences and cultural differences	

Standard of proficiency	**Mapping to programme and module aims and learning outcomes**
5.2 understand equality legislation and apply it to their practice	
5.3 recognise the potential impact of their own values, beliefs and personal biases (which may be unconscious) on practice and take personal action to ensure all service users and carers are treated appropriately with respect and dignity	
5.4 understand the duty to make reasonable adjustments in practice and be able to make and support reasonable adjustments in theirs and others' practice	
5.5 recognise the characteristics and consequences of barriers to inclusion, including for socially isolated groups	
5.6 actively challenge these barriers, supporting the implementation of change wherever possible	
5.7 recognise that regard to equality, diversity and inclusion needs to be embedded across all areas of the standards and practice	
5.8 understand the emotions, behaviours and psychosocial needs of people undergoing diagnostic ultrasound imaging, as well as that of their families and carers	
6. understand the importance of and be able to maintain confidentiality	
6.1 adhere to the professional duty of confidentiality and understand when disclosure may be required	
6.2 understand the principles of information governance and be aware of the safe and effective use of health and social care information	
6.3 recognise and respond in a timely manner to situations where it is necessary to share information to safeguard service users, carers and / or the wider public	
6.4 understand the need to ensure confidentiality is maintained in all situations in which service users rely on additional communication support (such as interpreters or translators)	

Standard of proficiency	Mapping to programme and module aims and learning outcomes
6.5 recognise that the concepts of confidentiality and informed consent extend to all mediums, including illustrative clinical records such as photography, video and audio recordings and digital platforms	
7. communicate effectively	
7.1 use effective and appropriate verbal and non-verbal skills to communicate with service users, carers, colleagues and others	
7.2 communicate in English to the required standard for their profession (equivalent to level 7 of the International English Language Testing System, with no element below 6.5[2])	
7.3 understand the characteristics and consequences of verbal and non-verbal communication and recognise how these can be affected by difference of any kind including, but not limited to, protected characteristics,[1] , intersectional experiences and cultural differences	
7.4 work with service users and / or their carers to facilitate the service user's preferred role in decision-making, and provide service users and carers with the information they may need where appropriate	
7.5 modify their own means of communication to address the individual communication needs and preferences of service users and carers, and remove any barriers to communication where possible	
7.6 understand the need to support the communication needs of service users and carers, such as through the use of an appropriate interpreter	
7.7 use information, communication and digital technologies appropriate to their practice	
7.8 understand the need to provide service users or people acting on their behalf with the information necessary in accessible formats to enable them to make informed decisions	

Standard of proficiency	**Mapping to programme and module aims and learning outcomes**
7.9 formulate and provide information and support for service users about their treatment and / or imaging process and procedures, with regular reappraisal of their information needs as appropriate	
7.10 advise other healthcare professionals about the relevance and application of imaging modalities to the service user's needs	
7.11 provide appropriate information and support for service users throughout their diagnostic imaging examinations	
8. work appropriately with others	
8.1 work in partnership with service users, carers, colleagues and others	
8.2 recognise the principles and practices of other health and care professionals and systems and how they interact with their profession	
8.3 understand the need to build and sustain professional relationships as both an autonomous practitioner and collaboratively as a member of a team	
8.4 contribute effectively to work undertaken as part of a multi-disciplinary team	
8.5 identify anxiety and stress in service users, carers and colleagues, adapting their practice and providing support where appropriate	
8.6 understand the qualities, behaviours and benefits of leadership	
8.7 recognise that leadership is a skill all professionals can demonstrate	
8.8 identify their own leadership qualities, behaviours and approaches, taking into account the importance of equality, diversity and inclusion	
8.9 demonstrate leadership behaviours appropriate to their practice	
8.10 act as a role model for others	

Standard of proficiency	**Mapping to programme and module aims and learning outcomes**
8.11 promote and engage in the learning of others	
8.12 demonstrate awareness of the need to empower service users to participate in the decision-making processes related to their profession	
8.13 demonstrate awareness of the need to encourage, support and mentor staff at all practitioner levels	
8.14 demonstrate awareness of roles and responsibilities where work is delegated and demonstrate understanding of how this applies in practice	
8.15 understand, interpret and act upon information from other healthcare professionals and service users, in order to maximise health gain whilst minimising risks to the service user (such as from ultrasound insonation)	
8.16 understand the need to involve service users in service design, service delivery, education and research	
8.17 understand the need to engage service users and carers in planning and evaluating their diagnostic imaging and interventional procedures	
9. maintain records appropriately	
9.1 keep full, clear and accurate records in accordance with applicable legislation, protocols and guidelines	
9.2 manage records and all other information in accordance with applicable legislation, protocols and guidelines	
9.3 use digital record keeping tools, where required	
10. reflect on and review practice	
10.1 understand the value of reflective practice and the need to record the outcome of such reflection to support continuous improvement	
10.2 recognise the value of multi-disciplinary reviews, case conferences and other methods of review	

Standard of proficiency	**Mapping to programme and module aims and learning outcomes**
11. assure the quality of their practice	
11.1 engage in evidence-based practice and relevant audit procedures	
11.2 gather and use feedback and information, including qualitative and quantitative data, to evaluate the response of service users to their care	
11.3 monitor and systematically evaluate the quality of practice, and maintain an effective quality management and quality assurance process working towards continual improvement	
11.4 participate in quality management, including quality control, quality assurance, clinical governance and the use of appropriate outcome measures	
11.5 evaluate intervention plans using recognised and appropriate outcome measures, in conjunction with the service user where possible, and revise the plans as necessary	
11.6 recognise the value of gathering and using data for quality assurance and improvement programmes	
11.7 understand the principles and regulatory requirements for quality control and quality assurance as they apply to their profession	
11.8 understand the quality improvement processes in place relevant to their profession	
12. understand and apply the key concepts of the knowledge base relevant to their profession	
12.1 understand the structure and function of the human body, together with knowledge of physical and mental health, disease, disorder and dysfunction relevant to their profession	
12.2 demonstrate awareness of the principles and applications of scientific enquiry, including the evaluation of treatment efficacy and the research process	
12.3 recognise the role(s) of other professions and services in health and social care and understand how they may relate to the role of radiographer	

Standard of proficiency	Mapping to programme and module aims and learning outcomes
12.4 understand the structure and function of health and social care systems and services in the UK	
12.5 demonstrate awareness of the philosophy and the development of the profession of sonography to inform understanding of current practice	
12.6 understand the role of the sonographer and other operators in the promotion of health and health education in relation to public health, healthy living and health screening for disease detection	
12.7 understand the harms and benefits of population and targeted health screening	
12.8 understand the physical principles on which the practice of sonography is based	
12.9 understand the concept of risk vs benefit with regards to ionising radiation and non-ionising radiation, acknowledging this will differ depending on modality, and communicate this with service users, taking into consideration service user judgement	
12.10 understand the philosophy and principles involved in the practice of their profession	
12.11 understand and apply the principles of ultrasound production, interaction with matter	
12.12 know the physical and scientific principles on which image formation using ultrasound is based	
12.13 understand ultrasound safety including the principles of safety indices and how to meet national and international safety guidelines	
12.14 understand the theoretical basis underpinning service user assessment prior to and during their procedure	
12.15 understand the capability, applications and range of equipment used in their profession	
12.16 distinguish between normal and abnormal appearances in real-time and on images	

Standard of proficiency	**Mapping to programme and module aims and learning outcomes**
12.17 know the concepts and principles involved in the practice of their profession and how these inform and direct clinical judgement and decision making	
12.18 know the pharmacology of drugs used in their profession	
12.19 understand the legislation, principles and methods for the safe and effective administration of drugs used in their profession	
12.20 understand the mechanisms for the administration of drugs, including intravenous contrast agents	
12.21 recognise and respond to adverse or abnormal reactions to medications used in relation to their profession	
12.22 understand the principles of the safe storage, transportation and disposal of medicinal products used in relation their profession	
12.23 demonstrate awareness of the current developments and trends in the science and practice of sonography	
12.24 understand the different communication needs, anatomy and disease processes and their manifestation in children	
12.25 demonstrate awareness of the principles of Artificial Intelligence (AI) and deep learning technology, and its application to practice	
12.26 understand the signs and symptoms of disease and trauma that result in referral for diagnostic imaging procedures and their image appearances	
12.27 understand the structure and function of the human body in health, disease and trauma, as well as common pathologies and mechanisms of disease and trauma, relating to area(s) within the individual scope of clinical practice e.g. obstetric, gynaecological, general medical, vascular, musculoskeletal ultrasound	
13. draw on appropriate knowledge and skills to inform practice	
13.1 change their practice as needed to take account of new developments, technologies and changing contexts	
13.2 gather appropriate information	

Standard of proficiency	Mapping to programme and module aims and learning outcomes
13.3 analyse and critically evaluate the information collected to be able to assess, monitor and care for the service user before, during and after ultrasound procedures	
13.4 select and use appropriate assessment techniques and equipment and be able to use independent methods to establish and confirm service user identity prior to undertaking ultrasound procedures	
13.5 undertake and record a thorough, sensitive and detailed assessment	
13.6 undertake or arrange investigations as appropriate	
13.7 conduct appropriate assessment or monitoring procedures, treatment, therapy or other actions safely and effectively	
13.8 recognise a range of research methodologies relevant to their role	
13.9 recognise the value of research to the critical evaluation of practice	
13.10 critically evaluate research and other evidence to inform their own practice	
13.11 engage service users in research as appropriate	
13.12 formulate specific and appropriate management plans including the setting of timescales	
13.13 assess, monitor and care for the service user across the pathway of care relevant to their profession	
13.14 undertake and record a thorough, sensitive and detailed clinical assessment, selecting and using appropriate techniques and equipment	
13.15 use physical, graphical, verbal and electronic methods to collect and analyse information from a range of relevant sources including service user's clinical history, diagnostic images and reports, pathological tests and results, dose recording and treatment verification systems	

Standard of proficiency	Mapping to programme and module aims and learning outcomes
13.16 interrogate and process data and information gathered accurately in order to conduct the procedures most appropriate to the service user's needs	
13.17 appraise image information for clinical manifestations and technical accuracy, and take further action as required	
13.18 manage complex and unpredictable situations including the ability to adapt planned procedures	
13.19 operate ultrasound imaging equipment safely and accurately relevant to their profession	
13.20 check that equipment is functioning accurately and within the specifications, and to take appropriate action in the case of faulty functioning and operation	
13.21 select and explain the rationale for radiographic techniques and immobilisation procedures appropriate to the service user's physical and disease management requirements	
13.22 position service users correctly for safe and accurate procedures	
13.23 Authorise and plan appropriate ultrasound imaging examinations	
13.24 evaluate ultrasound on-screen safety indices (TI & MI) and their relevance in risk benefit decisions; understand and apply techniques to reduce insonation appropriately	
13.25 perform a broad range of ultrasound imaging techniques, relevant to scope of practice	
13.26 assist with more complex diagnostic ultrasound imaging techniques and interventional procedures providing support to the service user and other members of the multidisciplinary team, if within scope of practice	
13.27 critically analyse ultrasound images for technical quality and suggest improvement if required	
13.28 use to best effect the processing and related technology supporting imaging systems	

Standard of proficiency	**Mapping to programme and module aims and learning outcomes**
13.29 distinguish disease, trauma and urgent and unexpected findings as they manifest on diagnostic images and take direct and timely action to assist the referrer	
14. establish and maintain a safe practice environment	
14.1 understand the need to maintain the safety of themself and others, including service users, carers and colleagues	
14.2 demonstrate awareness of relevant health and safety legislation and comply with all local operational procedures and policies	
14.3 work safely, including being able to select appropriate hazard control and risk management, reduction or elimination techniques in a safe manner and in accordance with health and safety legislation	
14.4 select appropriate personal protective equipment and use it correctly	
14.5 establish safe environments for practice, which appropriately manage risk	
14.6 understand and apply appropriate moving and handling techniques	
14.7 ensure the physical safety of all individuals in the imaging work environment	
14.8 use basic life support techniques and be able to deal with clinical emergencies	
14.9 know the correct principles and applications of disinfectants, methods for sterilisation and decontamination, and for dealing with waste and spillages correctly	
15. promote health and prevent ill health	
15.1 understand the role of their profession in health promotion, health education and preventing ill health	
15.2 understand how social, economic and environmental factors (wider determinants of health) can influence a person's health and well-being	

Standard of proficiency	Mapping to programme and module aims and learning outcomes
15.3 empower and enable individuals (including service users and colleagues) to play a part in managing their own health	
15.4 engage in occupational health, including being aware of immunisation requirements	

The Equality Act 2010 defines the protected characteristics as age, disability, gender reassignment, race, religion or belief, sex, sexual orientation, marriage and civil partnership and pregnancy and maternity. Equivalent equality legislation in Northern Ireland protects age, disability, gender, race, religion or belief and sexual orientation.

The International English Language Testing System (IELTS) tests competence in the English language. Applicants who have qualified outside of the UK, whose first language is not English and who are not applying through the Swiss Mutual Recognition Route (SMR) must provide evidence that they have reached the necessary standard. More information available here: Statement on English language proficiency requirements for internationally trained health and care professionals | (hcpc-uk.org).

Appendix 5: Example Formative Clinical Assessment Form

CLINICAL COMPETENCY OBJECTIVES – ULTRASOUND MANAGEMENT

Student's Name:	**Registration Number:**
Patient 1 Clinical History:	
Patient 2 Clinical History:	
Patient 3 Clinical History:	
Patient 4 Clinical History:	
✓ the appropriate box **ONLY** if the student **CORRECTLY** carries out the competency. Clinical competencies marked with an * will lead to an overall technical fail if not passed for all five patients. Students MUST achieve a ✓ in at least 60 of the non-* boxes, with no less than three ✓ per competency (row).	

Clinical Competency Objective	P1	P2	P3	P4	P5	Comments
Prepared the room appropriately						
Collated all relevant information						
Understood the implications of the request						
Communicated and liaised, where necessary, with the appropriate personnel both before and after the examination						
Introduced themselves, and appropriate personnel, to the patient						
Checked the patient's identity and entered the patient's details correctly onto the equipment and computer system *						
Explained the procedure to the patient and obtained informed consent *						
Presented themselves in a professional and ethical manner during the examination						
Advised the patient of the correct information before leaving the department						
Worked and communicated effectively with the Clinical Supervisor						
On completion of the summative assessment, please mark as PASS or FAIL	PASS			FAIL		

CLINICAL COMPETENCY OBJECTIVES – ULTRASOUND EQUIPMENT

Clinical Competency Objective	P1	P2	P3	P4	P5	Comments
Correct identification of patient entered onto the ultrasound ID package *						
Demonstrated appropriate selection and use of equipment controls before and during the examination *						
Demonstrated understanding of the advantages and limitations of the equipment						
Proof of knowledge and understanding of local Quality Assurance programme with relevant documentation						
Demonstrated understanding and justification for use of equipment controls e.g. 1. Output power selection 2. Frequency selection 3. Time gain control 4. Overall gain control 5. Position of focal zone(s) 6. Magnification/zoom 7. Colour and power Doppler *						
Demonstrated appropriate and correct use of measurement package *						
Understood the ALARA principle; awareness of safety indices and how to use the equipment controls to reduce exposure to ultrasound *						
Correct anatomical identification and correct anatomical side identification (L and R) on images *						
Appropriate understanding and use of image recordings resulting in high quality images being stored as a record of the examination						
Demonstrated adequate care of the equipment with regard to physical damage						
On completion of the summative assessment, please mark as PASS or FAIL	PASS				FAIL	

CLINICAL COMPETENCY OBJECTIVES – ULTRASOUND TECHNIQUE

Clinical Competency Objective	P1	P2	P3	P4	P5	Comments
Checked that appropriate preparation has been carried out						
Followed departmental protocol when carrying out the examination						
Demonstrated an understanding of ergonomics by positioning themselves and the patient sensibly during the examination *						
Demonstrated and identified the relevant anatomy and pathology during the examination *						
Demonstrated correct use of the measurement calipers *						
Recorded relevant images at appropriate points throughout the examination						
Demonstrated the ability to acquire and record accurate colour or power Doppler images *						
Discussed differential diagnoses and took appropriate action as per departmental guidelines *						
Drew the correct conclusions from their observations *						
Constructed and recorded an accurate written clinical report *						
Gave care and attention to the patient's safety by following departmental health and safety and infection control guidelines/procedures						
On completion of the summative assessment, please mark as PASS or FAIL	PASS				FAIL	
COMMENTS:						
CLINICAL SUPERVISOR (PRINT NAME): CLINICAL SUPERVISOR'S SIGNATURE: DATE:						

Appendix 6: Example Summative Clinical Assessment Form

To be completed jointly by the Clinical Supervisor and Independent Assessor

CLINICAL COMPETENCY OBJECTIVES – ULTRASOUND MANAGEMENT

Student's Name:	**Registration Number:**
Patient 1 Clinical History:	
Patient 2 Clinical History:	
Patient 3 Clinical History:	
Patient 4 Clinical History:	
Patient 5 Clinical History:	
✓ **the appropriate box ONLY if the student CORRECTLY carries out the competency.** **Clinical competencies marked with an * will lead to an overall technical fail if not passed for all five patients.** **Students MUST achieve a ✓ in at least 60 of the non-* boxes, with no less than three ✓ per competency (row).**	

Clinical Competency Objective	P1	P2	P3	P4	P5	Comments
Prepared the room appropriately						
Collated all relevant information						
Understood the implications of the request						
Communicated and liaised, where necessary, with the appropriate personnel both before and after the examination						
Introduced themselves, and appropriate personnel, to the patient						
Checked the patient's identity and entered the patient's details correctly onto the equipment and computer system *						
Explained the procedure to the patient and obtained informed consent *						
Presented themselves in a professional and ethical manner during the examination						
Advised the patient of the correct information before leaving the department						
Worked and communicated effectively with the Clinical Supervisor						
On completion of the summative assessment, please discuss the outcome and mark as either a PASS or FAIL	PASS			FAIL		

CLINICAL COMPETENCY OBJECTIVES – ULTRASOUND EQUIPMENT

Clinical Competency Objective	P1	P2	P3	P4	P5	Comments
Correct identification of patient entered onto the ultrasound ID package *						
Demonstrated appropriate selection and use of equipment controls before and during the examination *						
Demonstrated understanding of the advantages and limitations of the equipment						
Proof of knowledge and understanding of local Quality Assurance programme with relevant documentation						
Demonstrated understanding and justification for use of equipment controls e.g. 1. **Output power selection** 2. **Frequency selection** 3. **Time gain control** 4. **Overall gain control** 5. **Position of focal zone(s)** 6. **Magnification/zoom** 7. **Colour and power Doppler** *						
Demonstrated appropriate and correct use of measurement package *						
Understood the ALARA principle; awareness of safety indices and how to use the equipment controls to reduce exposure to ultrasound *						
Correct anatomical identification and correct anatomical side identification (L and R) on images *						
Appropriate understanding and use of image recordings resulting in high quality images being stored as a record of the examination						
Demonstrated adequate care of the equipment with regard to physical damage						
On completion of the summative assessment, please discuss the outcome and mark as either a PASS or FAIL	**PASS**				**FAIL**	

CLINICAL COMPETENCY OBJECTIVES – ULTRASOUND TECHNIQUE

Clinical Competency Objective	P1	P2	P3	P4	P5	Comments
Checked that appropriate preparation has been carried out						
Followed departmental protocol when carrying out the examination						
Demonstrated an understanding of ergonomics by positioning themselves and the patient sensibly during the examination *						
Demonstrated and identified the relevant anatomy and pathology during the examination *						
Demonstrated correct use of the measurement calipers *						
Recorded relevant images at appropriate points throughout the examination						
Demonstrated the ability to acquire and record accurate colour or power Doppler images *						
Discussed differential diagnoses and took appropriate action as per departmental guidelines *						
Drew the correct conclusions from their observations *						
Constructed and recorded an accurate written clinical report *						
Gave care and attention to the patient's safety by following departmental health and safety and infection control guidelines/procedures						
On completion of the summative assessment, please discuss the outcome and mark as either a PASS or FAIL	**PASS**				**FAIL**	
CLINICAL SUPERVISOR (PRINT NAME): **CLINICAL SUPERVISOR'S SIGNATURE:** **DATE:**						
INDEPENDENT ASSESSOR (PRINT NAME): **INDEPENDENT ASSESSOR'S SIGNATURE:** **DATE:**						

Appendix 7: Example of an Audit of Clinical Placement Form

AUDIT OF PROPOSED CLINICAL PLACEMENT	
Name of student:	**Programme/Course Title:**
PRACTICE EDUCATOR / MENTOR / CLINICAL SUPERVISOR (CV must be included along with this form) The person fulfilling this role must have a wide range of experience and hold a recognised ultrasound qualification in the area of practice being studied by the student or trainee, unless this is a new area of practice or an extended role such as interventional ultrasound or point of care ultrasound. It is advisable that the practice educator/mentor/clinical supervisor has a minimum of two years current clinical experience.	
Name: **Email:** **Phone:**	**Job / Role Title:** **Ultrasound Qualification(s) and date(s):**
EXTERNAL ASSESSOR / EXTERNAL MODERATOR / INDEPENDENT ASSESSOR The person fulfilling this role should be a senior professional with extensive appropriate experience who is able to demonstrate on-going continual professional development (CPD) relevant to the area(s) of practice they are assessing. As the role involves ensuring appropriate standards are consistently met, it is advisable for the external assessor/moderator/independent assessor to have a minimum of three years current clinical experience.	
Name: **Email:** **Phone:**	**Job / Role Title:** **Ultrasound Qualification(s) and date(s):**

ULTRASOUND DEPARTMENT OR CLINICAL DEPARTMENT/UNIT PROVIDING THE CLINICAL PLACEMENT		
Name: **Address:** **Telephone Number:**		
Number of US rooms used for the Programme/ Course examinations:		
US equipment used for the Programme/Course examinations:		
Number of dedicated Programme/Course lists per week:		
Types of Programme/Course examinations performed (e.g. different referral sources) (please list):		
Number of staff performing the Programme/ Course examinations:	**Radiologists:**	
	Sonographers:	
	Others (please identify):	
How stable is the Ultrasound Department/Unit in terms of staffing levels?		
Do you currently have any other ultrasound students and, if so, how many?		

AGREEMENT	
I agree that the Department/Unit will provide the following: • Dedicated scanning sessions per clinical block of supervised clinical practice covering an appropriate range of relevant Programme/Course ultrasound examinations. • A Practice Educator/Mentor/Clinical Supervisor for the student for the duration of the Programme/Course and to assess the student's clinical competence at the end of the Programme/Course; • An External Assessor/External Moderator/Independent Assessor to assess the student's clinical competence at the end of the Programme/Course.	
LINE MANAGER	
Name: **Signature:** **Date:**	**Email:** **Phone:**

Appendix 8: Standard of Proficiency for a Sonographer

These standards are based on the HCPC standards of proficiency for a Radiographer[21]. Some aspects have been amended to relate to ultrasound practice, where relevant.

Mapping to these Standards should be completed for any programme offering direct entry ultrasound education, which enables non-registered health care professionals to enter the sonography workforce.

Standard of proficiency	**Mapping to programme and module aims and learning outcomes**
Sonographers must:	
1. be able to practise safely and effectively within their scope of practice	
1.1 identify the limits of their practice and when to seek advice or refer to another professional or service	
1.2 recognise the need to manage their own workload and resources safely and effectively, including managing the emotional burden that comes with working in a pressured environment	
1.3 keep their skills and knowledge up to date and understand the importance of continuing professional development throughout their career	
2. practise within the legal and ethical boundaries of their profession	
2.1 maintain high standards of personal and professional conduct	
2.2 promote and protect the service user's interests at all times	
2.3 understand the importance of safeguarding by actively looking for signs of abuse, demonstrating understanding of relevant safeguarding processes, and engaging in these processes where necessary	
2.4 understand what is required of them by the Health and Care Professions Council, including but not limited to the Standards of conduct, performance and ethics	

Standard of proficiency	Mapping to programme and module aims and learning outcomes
2.5 respect and uphold the rights, dignity, values, and autonomy of service users, including their role in the assessment, diagnostic and / or therapeutic process	
2.6 recognise that relationships with service users, carers and others should be based on mutual respect and trust, maintaining high standards of care in all circumstances	
2.7 understand the importance of and be able to obtain valid consent, which is voluntary and informed, has due regard to capacity, is proportionate to the circumstances and is appropriately documented	
2.8 understand the importance of capacity in the context of delivering care and treatment	
2.9 understand the scope of a professional duty of care, and exercise that duty	
2.10 understand and apply legislation, policies and guidance relevant to their profession and scope of practice	
2.11 recognise the power imbalance which comes with being a health care professional, and ensure they do not abuse this for personal gain	
2.12 understand the legislative, policy, ethical and research frameworks that underpin, inform and influence the practice of radiography	
3. look after their health and wellbeing, seeking appropriate support where necessary	
3.1 identify anxiety and stress in themselves and recognise the potential impact on their practice	
3.2 understand the importance of their own mental and physical health and wellbeing strategies in maintaining fitness to practise	

Standard of proficiency	Mapping to programme and module aims and learning outcomes
3.3 understand how to take appropriate action if their health may affect their ability to practise safely and effectively, including seeking help and support when necessary	
3.4 develop and adopt clear strategies for physical and mental self-care and self-awareness, to maintain a high standard of professional effectiveness and a safe working environment	
4. practise as an autonomous professional, exercising their own professional judgement	
4.1 recognise that they are personally responsible for and must be able to justify their decisions and actions	
4.2 use their skills, knowledge and experience, and the information available to them, to make informed decisions and / or take action where necessary	
4.3 make reasoned decisions to initiate, continue, modify or cease treatment or the use of techniques or procedures, and record the decisions and reasoning appropriately	
4.4 make and receive appropriate referrals, where necessary	
4.5 exercise personal initiative	
4.6 demonstrate a logical and systematic approach to problem solving	
4.7 use research, reasoning and problem-solving skills when determining appropriate actions	
4.8 understand the need for active participation in training, supervision and mentoring in supporting high standards of practice, and personal and professional conduct, and the importance of demonstrating this in practice	
5. recognise the impact of culture, equality and diversity on practice and practise in a non-discriminatory and inclusive manner	
5.1 respond appropriately to the needs of all different groups and individuals in practice, recognising this can be affected by difference of any kind including, but not limited to, protected characteristics,[1] intersectional experiences and cultural differences	

Standard of proficiency	Mapping to programme and module aims and learning outcomes
5.2 understand equality legislation and apply it to their practice	
5.3 recognise the potential impact of their own values, beliefs and personal biases (which may be unconscious) on practice and take personal action to ensure all service users and carers are treated appropriately with respect and dignity	
5.4 understand the duty to make reasonable adjustments in practice and be able to make and support reasonable adjustments in theirs and others' practice	
5.5 recognise the characteristics and consequences of barriers to inclusion, including for socially isolated groups	
5.6 actively challenge these barriers, supporting the implementation of change wherever possible	
5.7 recognise that regard to equality, diversity and inclusion needs to be embedded across all areas of the standards and practice	
5.8 understand the emotions, behaviours and psychosocial needs of people undergoing diagnostic ultrasound imaging, as well as that of their families and carers	
6. understand the importance of and be able to maintain confidentiality	
6.1 adhere to the professional duty of confidentiality and understand when disclosure may be required	
6.2 understand the principles of information governance and be aware of the safe and effective use of health and social care information	
6.3 recognise and respond in a timely manner to situations where it is necessary to share information to safeguard service users, carers and / or the wider public	
6.4 understand the need to ensure confidentiality is maintained in all situations in which service users rely on additional communication support (such as interpreters or translators)	

Standard of proficiency	Mapping to programme and module aims and learning outcomes
6.5 recognise that the concepts of confidentiality and informed consent extend to all mediums, including illustrative clinical records such as photography, video and audio recordings and digital platforms	
7. communicate effectively	
7.1 use effective and appropriate verbal and non-verbal skills to communicate with service users, carers, colleagues and others	
7.2 communicate in English to the required standard for their profession (equivalent to level 7 of the International English Language Testing System, with no element below 6.5[2])	
7.3 understand the characteristics and consequences of verbal and non-verbal communication and recognise how these can be affected by difference of any kind including, but not limited to, protected characteristics,[1] , intersectional experiences and cultural differences	
7.4 work with service users and / or their carers to facilitate the service user's preferred role in decision-making, and provide service users and carers with the information they may need where appropriate	
7.5 modify their own means of communication to address the individual communication needs and preferences of service users and carers, and remove any barriers to communication where possible	
7.6 understand the need to support the communication needs of service users and carers, such as through the use of an appropriate interpreter	
7.7 use information, communication and digital technologies appropriate to their practice	
7.8 understand the need to provide service users or people acting on their behalf with the information necessary in accessible formats to enable them to make informed decisions	

Standard of proficiency	Mapping to programme and module aims and learning outcomes
7.9 formulate and provide information and support for service users about their treatment and / or imaging process and procedures, with regular reappraisal of their information needs as appropriate	
7.10 advise other healthcare professionals about the relevance and application of imaging modalities to the service user's needs	
7.11 provide appropriate information and support for service users throughout their diagnostic imaging examinations	
8. work appropriately with others	
8.1 work in partnership with service users, carers, colleagues and others	
8.2 recognise the principles and practices of other health and care professionals and systems and how they interact with their profession	
8.3 understand the need to build and sustain professional relationships as both an autonomous practitioner and collaboratively as a member of a team	
8.4 contribute effectively to work undertaken as part of a multi-disciplinary team	
8.5 identify anxiety and stress in service users, carers and colleagues, adapting their practice and providing support where appropriate	
8.6 understand the qualities, behaviours and benefits of leadership	
8.7 recognise that leadership is a skill all professionals can demonstrate	
8.8 identify their own leadership qualities, behaviours and approaches, taking into account the importance of equality, diversity and inclusion	
8.9 demonstrate leadership behaviours appropriate to their practice	
8.10 act as a role model for others	

Standard of proficiency	Mapping to programme and module aims and learning outcomes
8.11 promote and engage in the learning of others	
8.12 demonstrate awareness of the need to empower service users to participate in the decision-making processes related to their profession	
8.13 demonstrate awareness of the need to encourage, support and mentor staff at all practitioner levels	
8.14 demonstrate awareness of roles and responsibilities where work is delegated and demonstrate understanding of how this applies in practice	
8.15 understand, interpret and act upon information from other healthcare professionals and service users, in order to maximise health gain whilst minimising risks to the service user (such as from ultrasound insonation)	
8.16 understand the need to involve service users in service design, service delivery, education and research	
8.17 understand the need to engage service users and carers in planning and evaluating their diagnostic imaging and interventional procedures	
9. maintain records appropriately	
9.1 keep full, clear and accurate records in accordance with applicable legislation, protocols and guidelines	
9.2 manage records and all other information in accordance with applicable legislation, protocols and guidelines	
9.3 use digital record keeping tools, where required	
10. reflect on and review practice	
10.1 understand the value of reflective practice and the need to record the outcome of such reflection to support continuous improvement	
10.2 recognise the value of multi-disciplinary reviews, case conferences and other methods of review	

Standard of proficiency	Mapping to programme and module aims and learning outcomes
11. assure the quality of their practice	
11.1 engage in evidence-based practice and relevant audit procedures	
11.2 gather and use feedback and information, including qualitative and quantitative data, to evaluate the response of service users to their care	
11.3 monitor and systematically evaluate the quality of practice, and maintain an effective quality management and quality assurance process working towards continual improvement	
11.4 participate in quality management, including quality control, quality assurance, clinical governance and the use of appropriate outcome measures	
11.5 evaluate intervention plans using recognised and appropriate outcome measures, in conjunction with the service user where possible, and revise the plans as necessary	
11.6 recognise the value of gathering and using data for quality assurance and improvement programmes	
11.7 understand the principles and regulatory requirements for quality control and quality assurance as they apply to their profession	
11.8 understand the quality improvement processes in place relevant to their profession	
12. understand and apply the key concepts of the knowledge base relevant to their profession	
12.1 understand the structure and function of the human body, together with knowledge of physical and mental health, disease, disorder and dysfunction relevant to their profession	
12.2 demonstrate awareness of the principles and applications of scientific enquiry, including the evaluation of treatment efficacy and the research process	
12.3 recognise the role(s) of other professions and services in health and social care and understand how they may relate to the role of radiographer	

Standard of proficiency	Mapping to programme and module aims and learning outcomes
12.4 understand the structure and function of health and social care systems and services in the UK	
12.5 demonstrate awareness of the philosophy and the development of the profession of sonography to inform understanding of current practice	
12.6 understand the role of the sonographer and other operators in the promotion of health and health education in relation to public health, healthy living and health screening for disease detection	
12.7 understand the harms and benefits of population and targeted health screening	
12.8 understand the physical principles on which the practice of sonography is based	
12.9 understand the concept of risk vs benefit with regards to ionising radiation and non-ionising radiation, acknowledging this will differ depending on modality, and communicate this with service users, taking into consideration service user judgement	
12.10 understand the philosophy and principles involved in the practice of their profession	
12.11 understand and apply the principles of ultrasound production, interaction with matter	
12.12 know the physical and scientific principles on which image formation using ultrasound is based	
12.13 understand ultrasound safety including the principles of safety indices and how to meet national and international safety guidelines	
12.14 understand the theoretical basis underpinning service user assessment prior to and during their procedure	
12.15 understand the capability, applications and range of equipment used in their profession	
12.16 distinguish between normal and abnormal appearances in real-time and on images	

Standard of proficiency	Mapping to programme and module aims and learning outcomes
12.17 know the concepts and principles involved in the practice of their profession and how these inform and direct clinical judgement and decision making	
12.18 know the pharmacology of drugs used in their profession	
12.19 understand the legislation, principles and methods for the safe and effective administration of drugs used in their profession	
12.20 understand the mechanisms for the administration of drugs, including intravenous contrast agents	
12.21 recognise and respond to adverse or abnormal reactions to medications used in relation to their profession	
12.22 understand the principles of the safe storage, transportation and disposal of medicinal products used in relation their profession	
12.23 demonstrate awareness of the current developments and trends in the science and practice of sonography	
12.24 understand the different communication needs, anatomy and disease processes and their manifestation in children	
12.25 demonstrate awareness of the principles of Artificial Intelligence (AI) and deep learning technology, and its application to practice	
12.26 understand the signs and symptoms of disease and trauma that result in referral for diagnostic imaging procedures and their image appearances	
12.27 understand the structure and function of the human body in health, disease and trauma, as well as common pathologies and mechanisms of disease and trauma, relating to area(s) within the individual scope of clinical practice e.g. obstetric, gynaecological, general medical, vascular, musculoskeletal ultrasound	
13. draw on appropriate knowledge and skills to inform practice	
13.1 change their practice as needed to take account of new developments, technologies and changing contexts	
13.2 gather appropriate information	

Standard of proficiency	Mapping to programme and module aims and learning outcomes
13.3 analyse and critically evaluate the information collected to be able to assess, monitor and care for the service user before, during and after ultrasound procedures	
13.4 select and use appropriate assessment techniques and equipment and be able to use independent methods to establish and confirm service user identity prior to undertaking ultrasound procedures	
13.5 undertake and record a thorough, sensitive and detailed assessment	
13.6 undertake or arrange investigations as appropriate	
13.7 conduct appropriate assessment or monitoring procedures, treatment, therapy or other actions safely and effectively	
13.8 recognise a range of research methodologies relevant to their role	
13.9 recognise the value of research to the critical evaluation of practice	
13.10 critically evaluate research and other evidence to inform their own practice	
13.11 engage service users in research as appropriate	
13.12 formulate specific and appropriate management plans including the setting of timescales	
13.13 assess, monitor and care for the service user across the pathway of care relevant to their profession	
13.14 undertake and record a thorough, sensitive and detailed clinical assessment, selecting and using appropriate techniques and equipment	
13.15 use physical, graphical, verbal and electronic methods to collect and analyse information from a range of relevant sources including service user's clinical history, diagnostic images and reports, pathological tests and results, dose recording and treatment verification systems	

Standard of proficiency	Mapping to programme and module aims and learning outcomes
13.16 interrogate and process data and information gathered accurately in order to conduct the procedures most appropriate to the service user's needs	
13.17 appraise image information for clinical manifestations and technical accuracy, and take further action as required	
13.18 manage complex and unpredictable situations including the ability to adapt planned procedures	
13.19 operate ultrasound imaging equipment safely and accurately relevant to their profession	
13.20 check that equipment is functioning accurately and within the specifications, and to take appropriate action in the case of faulty functioning and operation	
13.21 select and explain the rationale for radiographic techniques and immobilisation procedures appropriate to the service user's physical and disease management requirements	
13.22 position service users correctly for safe and accurate procedures	
13.23 Authorise and plan appropriate ultrasound imaging examinations	
13.24 evaluate ultrasound on-screen safety indices (TI & MI) and their relevance in risk benefit decisions; understand and apply techniques to reduce insonation appropriately	
13.25 perform a broad range of ultrasound imaging techniques, relevant to scope of practice	
13.26 assist with more complex diagnostic ultrasound imaging techniques and interventional procedures providing support to the service user and other members of the multidisciplinary team, if within scope of practice	
13.27 critically analyse ultrasound images for technical quality and suggest improvement if required	
13.28 use to best effect the processing and related technology supporting imaging systems	

Standard of proficiency	Mapping to programme and module aims and learning outcomes
13.29 distinguish disease, trauma and urgent and unexpected findings as they manifest on diagnostic images and take direct and timely action to assist the referrer	
14. establish and maintain a safe practice environment	
14.1 understand the need to maintain the safety of themself and others, including service users, carers and colleagues	
14.2 demonstrate awareness of relevant health and safety legislation and comply with all local operational procedures and policies	
14.3 work safely, including being able to select appropriate hazard control and risk management, reduction or elimination techniques in a safe manner and in accordance with health and safety legislation	
14.4 select appropriate personal protective equipment and use it correctly	
14.5 establish safe environments for practice, which appropriately manage risk	
14.6 understand and apply appropriate moving and handling techniques	
14.7 ensure the physical safety of all individuals in the imaging work environment	
14.8 use basic life support techniques and be able to deal with clinical emergencies	
14.9 know the correct principles and applications of disinfectants, methods for sterilisation and decontamination, and for dealing with waste and spillages correctly	
15. promote health and prevent ill health	
15.1 understand the role of their profession in health promotion, health education and preventing ill health	
15.2 understand how social, economic and environmental factors (wider determinants of health) can influence a person's health and well-being	

Standard of proficiency	Mapping to programme and module aims and learning outcomes
15.3 empower and enable individuals (including service users and colleagues) to play a part in managing their own health	
15.4 engage in occupational health, including being aware of immunisation requirements	

Appendix 9: Contributors and Acknowledgements

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