

**Healthcare Science  
Practitioner Training Programme  
Training Manual 2010/11**

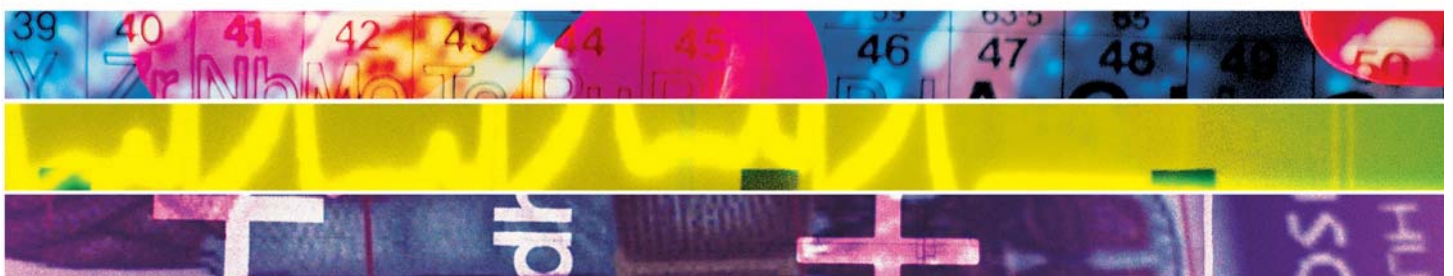
**Physiological Sciences:  
Neurosensory Sciences**

**Specialisms:**

- **Audiology**
- **Neurophysiology**
- **Ophthalmic and Vision Sciences**



**Modernising Scientific Careers**



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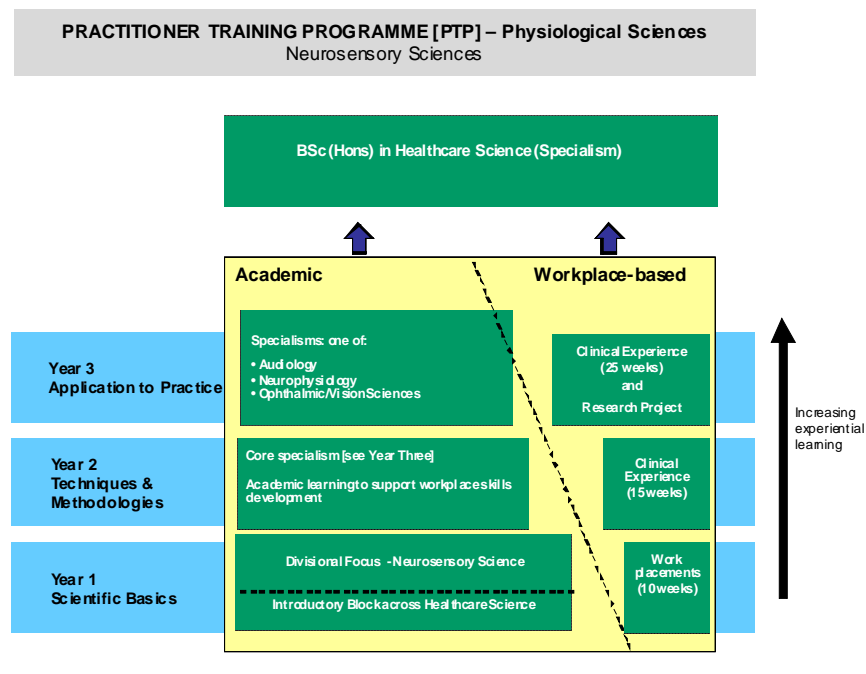
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# Section 1.0 Healthcare Science Practitioner Training Programme (PTP) in Neurosensory Sciences

## 1.1 Introduction

The training manual provides an overview of the integrated 3-year BSc (Hons) in Healthcare Science and a more detailed description of the structure and function of the work-based modules that form an integral part of the training programme for Healthcare Science Practitioners (HCSP) in Physiological Science specifically Audiology, Neurophysiology, Ophthalmic and Vision Science. This training manual must be used in conjunction with the course handbook provided by the Higher Education Institution with whom each student is registered.

The BSc (Hons) programme has been developed to provide the knowledge, skills and experience that underpins the role and function a Healthcare Science Practitioner is expected to successfully perform at the end the programme. The concept of this programme is shown in the diagram below.



## **1.2 Role of a Healthcare Science Practitioner**

A Healthcare Science Practitioner will have the necessary expertise in applied scientific techniques underpinned by theoretical knowledge within a specialism or related specialisms and will work in a range of healthcare settings:

- with a defined role in the delivery and reporting of quality assured tests, investigations and interventions on patients, samples or equipment;
- in a number of specialisms, HCSP will provide therapeutic interventions, some of which may be specialist.

## **1.3 Good Technical Practice**

Good Technical Practice sets out, for the profession and the public, the standards of behaviour and practice that must be achieved and maintained as a Healthcare Science Practitioner. One of the ways to help set the benchmark for professionals and their practice is to use the standards of professional regulators. This curriculum therefore:

- broadly uses the generic Health Professions Council (HPC) Standards of Proficiency and HPC Standards of Conduct, Performance and Ethics, but contextualises these for Healthcare Science.

The Domains of Good Technical Practice are:

1. Professional
2. Scientific
3. Clinical
4. Technical
5. Investigation and Reporting
6. Quality
7. Working with colleagues
8. Research and development
9. Probity
10. Leadership
11. Training and Developing Others

## **1.4 Overall Aim of the Training Programme**

The overall aim of this Healthcare Practitioner training and education programme is to prepare the student to fulfil the function of a Healthcare Practitioner working in a clinical healthcare setting in Audiology, Neurophysiology, Ophthalmic and Vision Science.

The programme combines and integrates both academic and work-based learning. Within the first year it is expected that the experiential component will start broad with short 'tasters' across Audiology, Neurophysiology, Ophthalmic and Vision Science with some exposure to other aspects of the patient pathways for example a clinic, patient education programme, medical records and other areas of healthcare science. This will give the student a wide appreciation of the many specialisms within Healthcare Science and a more holistic view of the areas, which contribute to high-quality care. At the end of the programme the student will be able to fulfil the role of a Healthcare Science Practitioner.

The diagram overleaf depicts the broad framework around which all BSc (Hons) degree programmes in Healthcare Science being implemented as part of the Modernising Scientific Careers (MSC) Programme are structured. Each of the three divisions within the MSC Programme (Physical Sciences and Biomedical Engineering, Life Sciences, and Physiological Sciences) have interpreted and adapted this framework. Further refinement has been undertaken by each Higher Education Institution to develop and deliver BSc (Hons) programmes that enable students to meet the learning outcomes of the course.

### HIGH LEVEL FRAMEWORK INTEGRATED BSc (Hons) IN HEALTHCARE SCIENCE

<b>Year 3 Application to Practice</b>	Professional Practice [10]	Scientific Basis of Healthcare Science Specialism [60]		Practice Based Project [30]	Work-based Training 25 weeks [20]	*46 wks
	Generic Curriculum	Specialism Specific Curriculum				
<b>Year 2 Techniques &amp; Methods</b>	Professional Practice [10]	Research Methods [10]	Scientific Basis of Healthcare Science [60]	Principles of Scientific Measurement [30]	Work-based Training 15 weeks [10]	*40 wks
	Generic Curriculum		Division/Theme Specific Curriculum		Discipline	
<b>Year 1 Scientific Basics</b>	Professional Practice [10]	Scientific Basis of Healthcare Science - Integrated Module across Body Systems will usually include informatics, maths and statistics [60]		Scientific Basis of Healthcare Science [50]	Work-based Training 10 weeks	*36 wks
	Generic Curriculum			Division/Theme Specific Curriculum		

	Generic Modules: Common to all divisions of Healthcare Science
	Division/Theme Specific Modules: Common to Life Sciences; Physical Sciences and Biomedical Engineering (Medical Physics Technology; Clinical Engineering); Physiological Sciences (Cardiovascular, Respiratory and Sleep Sciences; Neurosensory Sciences)
	Specialist Modules: Specific to a specialism

Section 2 provides an overview of the structure of the Generic, Division and Specialist modules for students in Physiological Sciences following the specialism of Audiology, Neurophysiology and Ophthalmic and Vision Science.

## Section 2.0 Programme Overview

### 2.1 Generic Modules

The 3-year degree has been designed with three key curriculum strands. The Generic Curriculum depicted in blue will be followed by all students undertaking Healthcare Science Practitioner BSc (Hons) degree and has three modules:

<b>Years 1,2 &amp; 3</b>	<b>Professional Practice</b>
<b>Year 1</b>	<b>Scientific Basis of Healthcare Science</b>
<b>Year 2</b>	<b>Research Methods</b>

The professional practice module is a vertical theme running from Year 1 to Year 3. In Year 1 all students will also study the Scientific Basis of Healthcare Science with integrated work-based learning and in Year 2 Research Methods.

### 2.2 Division/Theme Modules

The Division specific curriculum, depicted in yellow, will be followed by all students undertaking the programme in Neurosensory Sciences and this part of the programme has four modules:

<b>Year 1</b>	<b>Applied Physics and Measurement</b>
<b>Year 1</b>	<b>Applied Anatomy, Physiology and Pathophysiology</b>
<b>Year 1</b>	<b>Clinical Measurement and Treatment including work-based training</b>
<b>Year 2</b>	<b>Applied Physiological Measurement and Instrumentation</b>

### 2.3 Specialist Modules

The specialism specific curriculum, depicted in orange, will be followed by students specialising in **Audiology** and has four modules:

<b>Year 2</b>	<b>Audiological Sciences I</b>
<b>Years 2 and 3</b>	<b>Work-based training</b>
<b>Year 3</b>	<b>Audiological Science II including option module</b>
<b>Year 3</b>	<b>Research Project in Audiology</b>

The specialism specific curriculum, depicted in orange, will be followed by students specialising in **Neurophysiology** and has four modules:

<b>Year 2</b>	<b>Neurophysiology I</b>
<b>Years 2 and 3</b>	<b>Work-based training</b>
<b>Year 3</b>	<b>Neurophysiology II</b>
<b>Year 3</b>	<b>Research Project in Neurophysiology</b>

The specialism specific curriculum, depicted in orange, will be followed by students specialising in **Ophthalmic and Vision Science** and has four modules:

<b>Year 2</b>	<b>Ophthalmic and Vision Science I</b>
<b>Years 2 and 3</b>	<b>Work-based training</b>
<b>Year 3</b>	<b>Applied basic and clinical science</b>
<b>Year 3</b>	<b>Research Project in Ophthalmic and Vision Science</b>

## **Section 3.0**

### **Work-based Training Modules**

#### **3.1 Introduction**

The BSc (Hons) programme integrates knowledge, skills and experience and a series of work placements enables students to gain the skills and attitudes to practice as a Healthcare Science Practitioner. This section describes the learning outcomes across knowledge, skills, experience and professionalism that a student should gain during work-based training. The professional practice module runs vertically throughout the programme and many of the learning outcomes will be achieved in the work-base. Work-based learning should equate to a minimum of 10 weeks in Year 1 and a minimum of a further 40 weeks across Year 2 and 3.

The work-based placements in Year 1 expose the student to the clinical environments across Physiological Sciences and specifically within the Neurosensory Sciences theme. It is expected that the student will gain an understanding of how departments function, the range of investigations undertaken, the professional and inter-professional relationships, which exist, and a wider understanding of the NHS.

#### **Section 3.2**

**Division: Neurosensory Sciences**  
**Year 1: Work-based Training**

The overall aim of the work-based learning within Year 1 is to provide the student with a broad appreciation of the range of work undertaken within Healthcare Science. Students will begin the process of the development of the skills and attitudes relevant to the Healthcare Science Practitioner building on learning in the academic environment including practical sessions, clinical skills sessions, reflection on development etc. Additionally it should help students learn in the context of practice and real life experience and have a motivational element as they work towards a career in the NHS.

This module will provide a foundation from which the student will build their knowledge, skills, experience and attitudes throughout the three year programme of study and transfer these skills to employment in healthcare science. It is expected that this period of initial work-based training will provide the opportunity to begin to integrate and embed many of the professional practice learning outcomes and enable the student to practice safely in the workplace

Students will be expected to begin to maintain a portfolio of evidence and achievement in relevant sections of the Training Manual.



### **Learning Outcomes: Knowledge and Understanding**

On successful completion of this module the student will understand the:

1. Describe the roles undertaken by a Healthcare Science Practitioner relevant to each area of their placements.
2. Explain the range of technologies and procedures relevant to their placements.
3. Describe the work of the healthcare science workforce and explain how it contributes to the patient pathways relevant to each area of their placement.
4. Explain the need to ensure that the needs and wishes of the patient are central to their care.
5. Explain the importance of developing and maintaining the patient-professional partnership.
6. Explain the procedures relevant to the use of chaperones.
7. Explain the impact of adverse incidents on patients, carers and healthcare professionals.
8. Describe the procedures and need for evaluation of adverse incidents
9. Recognise the relevance of a Dress Code policy in the modern clinical environment.
10. Recognise the standards of professional behaviour expected of a Healthcare Science Practitioner.
11. Explain why responsibility for infection control is a shared responsibility.
12. Explain the structure of the organisation in which they undertake their work-based placements and inter-relationship of primary care, outpatient and inpatient services.

### **Learning Outcomes: Practical Skills**

On successful completion of this module the student will:

1. Safe working in the clinical environment relevant to Neurosensory Sciences.
2. The six stage hand-washing technique.
3. Basic Life Support in accordance with current Resuscitation Council (UK) guidelines.
4. Appropriate professional practice at all times.
5. Effective communication within the work-based environment and clinical team.
6. In accordance with local health and safety regulations, the ability to undertake routine investigations as defined in the accompanying Training Manual.

### **Learning Outcomes: Associated Personal Qualities and Behaviours (Professionalism)**

On successful completion of this module the student will:

1. Behave in a professional manner in matters of attendance, appearance,

- maintaining confidentiality and infection control.
2. Respect and understand individuals' beliefs and ways of coping with illness.
3. Value social diversity and its relationship to service provision in healthcare.
4. Demonstrate the ability to work safely within each environment.
5. Demonstrate the ability to treat patients with respect.
6. Communicate effectively with the healthcare environment and clinical team and develop appropriate interpersonal skills.
7. Seek to adapt their communication style to meet the varying needs of different peers, colleagues and patients in different contexts.
8. Adopt a range of techniques to overcome barriers to communication.
9. Develop and maintain professional relationships and effective team working.
10. Discuss and demonstrate safe and effective practice in a healthcare environment.
11. Begin to develop a balance between reflective practice and active exploration in personal learning.
12. Take responsibility for personal learning.

### **Indicative Content and Suggested Experience**

- Observe the work of a range of Healthcare Science departments, technologies and procedures
- Observe the process for handling work requests from the receipt of the request to completion
- Observe the patient journey from admission to discharge
- Gain an understanding of the skills required to work safely in the clinical/laboratory/workshop/radiation environment
- Record keeping, data protection, confidentiality
- Gain an appreciation of how the NHS is structured
- Team working and the role of multi-disciplinary team meetings
- Meaning and role of professionalism and professions in healthcare
- Roles of different professional grouping in Healthcare Science
- Human and social diversity and its implications for relationships, behaviours and service provision in healthcare
- Types of effective communication in the context of healthcare. Barriers to effective communication and strategies to overcome them
- Interpersonal skills related to dealing with patients, carers and healthcare professionals
- The skills needed to work as part of a team
- Management and evaluation of adverse incidents
- Data management (paper and electronic)
- Infection control
- Basic Life Support
- Reflective practice and its application

### Section: 3.3

<b>Division:</b>	<b>Physiological Sciences</b>
<b>Theme:</b>	<b>Neurosensory Sciences</b>
<b>Specialism:</b>	<b>Audiology</b>
<b>Years 2 and 3:</b>	<b>Work-based Training [30 Credits in total across both Years]</b>

***Important Note: Work-based training does not have to be confined only to the work-base but elements may be taught in other environments, e.g. a clinical skills laboratory, simulation centre or science laboratory.***

The indicative content for the specialist work-based training modules in Year 2 is defined in the Year 3 module content to be achieved across Year 2 and 3.

The overall aim of this module is to give the student experience of Audiology that ensures that the student can undertake the breadth of practice expected of a newly qualified Healthcare Science Practitioner in Audiological Science. This is delivered through work placements in Years 2 and 3 of the degree course and should highlight how the audiology relies on contemporary ideas to inform clinical practice.

Further work developing the framework for the accompanying Professional Portfolio across Healthcare Science and in the Specialist Pathways will define the levels of competency.

#### **Learning Outcomes: Knowledge and Understanding**

On successful completion of this module the student will:

1. Demonstrate increased knowledge, understanding and confidence in application of the core skills in clinical, patient identification, communication skills and management, and quality assurance.
2. Explain why patient should be assessed and managed using national and international standards, and recommended procedures and guidelines.
3. Demonstrate competence for tasks / situations in Audiology in:
  - Hearing assessments
  - Anatomical ear impressions
  - Hearing aid measurements, selection, programming and fitting
  - Simple hearing aid maintenance
  - Communication training.
4. Critically review and evaluate departmental protocols in relation to the core skills in Health and Safety, human rights, patient identification, communication skills and management, quality assurance.
5. Critically review and evaluate routine tasks in relation to Audiology.
6. Produce a Professional portfolio which cumulatively records / provides evidence of the skills, knowledge and attitudes gained.

### **Learning Outcomes: Practical Skills**

On successful completion of this module the student will:

1. Critically apply the scientific principles covered in the academic modules within own practice.
2. Make the appropriate choice of equipment/procedure.
3. Use equipment to produce the highest quality results.
4. Perform patient investigations in safe manner whilst undertaking appropriate infection control techniques.
5. Undertake and document measurement and assist in the production of a factual report.

### **Learning Outcomes: Associated Personal Qualities and Behaviours (Professionalism)**

On successful completion of this module the student will:

1. Present complex ideas in simple terms in both oral and written formats.
2. Challenge discriminatory behaviour and language.
3. Adapt communication style and language to meet needs of listeners.
4. Respect and uphold the rights, dignity and privacy of patients.
5. Establish patient-centred rapport.
6. Consistently focus on professional duty of care.
7. Reflect and review own practice to continuously improve personal performance.
8. Consistently operate within sphere of personal competence and level of authority.
9. Manage personal workload and objectives to achieve quality of care.
10. Actively seek accurate and validated information from all available sources.
11. Select and apply appropriate analysis or assessment techniques, tools and rehabilitative management plans.
12. Evaluate a wide range of data to assist with judgements and decision making.
13. Contribute to and co-operate with work of multi-disciplinary teams.

### **Indicative Content**

Students are expected to gain knowledge, skills and experience of routine Audiology investigations across the range of conditions.

### **Common content across test and management protocols**

- Ensure that all the required equipment is working correctly
- Ensure the test room is safe i.e. in accordance with Health and Safety policies
- Check the patient identification details in line with Placement Centre protocols
- Indication and contra-indications for testing
- Graphical representation of results and interpretation
- Safe decontamination of equipment
- Quality standards, control and assurance for all activities
- Professional, Statutory guidelines or protocols
- Care Pathways for patients with hearing and balance dysfunctions

### **Elemental skills**

- Patient History
  - Obtain a comprehensive patient history
  - Decide initial management strategy based on the history and any other information collected and that is justified
  - Record the results/gives information to patient
- Otoscopy
  - Apply hygiene standards (safely at all times)
  - Perform otoscopy in a safe and systematic manner (considering the patient and themselves)
  - Include examination of the Pinna and Auditory canal
  - Modify according to patient age, disability or needs
  - Report observations and/or findings
  - Initiate initial management strategy
- Ear Impression taking
  - Recognise contraindications
  - Correct and safe insertion of ear tamp / otoblock
  - Impression technique
  - Modify technique to patient requirements
  - Assess critically the quality of 'finished' impression
- Hearing Aid repair
  - Identify nature of problem
  - Problem solving and repair rectification
  - Further management and or guidance /advice giving
  - Debriefing
- Real Ear Measures [REM]
  - Set-up and calibration of equipment
  - Insert probes tubes

- Perform REM measurements
- Comparison of results to hearing thresholds
- Troubleshoot
- Hearing Aid test box Measures
  - Set-up and calibration of equipment
  - Perform a range of appropriate tests of hearing aid performance and output
  - Contrast hearing aid results to manufacturers specifications
  - Make adjustments to meet patient need

### **Hearing assessment**

The student should be able to demonstrate their learning, comprehension and practical competency skills to select from the following investigation procedures to assess, manage and decide upon a suitable healthcare plan for the patient:

- Tuning Fork tests
- Pure tone Audiometry
  - Not masked / masked thresholds
- Speech Audiometry
  - Different formats i.e. headphone / speaker
- Tympanometry
  - Middle ear pressure, compliance and volume
- Acoustic Reflex Thresholds
  - Unilateral and contra-lateral measures

The student should be able to describe, demonstrate and apply each of the following components when undertaking the above procedures:

- Clinical calibration of the audiological equipment
- Hygiene requirements and standards for each
- Placement of:
  - Supra aural air conduction transducer
  - Bone vibrator
  - Masking Earphone
  - Free field Speakers
- Threshold determination
- Perform the hearing test and reports/plots the results
- Awareness of errors/factors which may affect the results
- Modification technique to meet patient performance or ability
- Assimilate test results
- Integrates multiple audiological test results
- Relate results to potential pathologies

## **Hearing Rehabilitation and Management**

The student should be able to demonstrate their learning, comprehension and practical competency skills in the following rehabilitative management procedures:

- Hearing Assessment
- Hearing Aid Selection and Fitting
- Hearing aid verification
- Hearing aid evaluation
- Hearing Aid Reassessment
- Hearing Aid long term care i.e. follow-up
- Communication strategy guidance or advice

The student should be able to describe, demonstrate and apply their knowledge and competencies for each of the following components when undertaking any of the above procedures:

- Management strategy in collaboration with the patient using the
  - Patient history
  - Any reported or established changes in history
  - Results or observations from any test, or intervention
- Information and guidance giving
- Communication needs and available strategies
- Reasons for results
- Feedback to the patient and/or parent or carer
- Need for onward referral to other agencies or healthcare providers
- Concise, accurate reporting of results
- Outcome measures
- Action plans

### **Gains an awareness of:**

The student should be able to describe other electro-physiology procedures that are used in audiological practice

These should be included, but not exclusively:

- Evoked Response Audiometry:
- Auditory Brainstem Responses
  - Latencies; inter-peak intervals; wave amplitude
- Threshold Auditory Brainstem Responses
  - Threshold determination;
  - Latencies; latency-intensity function
- Oto-acoustic Emissions
  - Normative data; abnormal findings

- Auditory State Response audiometry

The student under supervision should be able to describe and demonstrate how to:

- Set-up and calibrate equipment
- Apply electrodes appropriately for optimum recording
- Apply the Health & Safety requirements
- Apply Infection control[s]
- Describe how to take a patient history
  - Non-auditory contra-indications
- Be aware of the test protocols
- Be aware of recording parameters
- Relate results to potential pathologies

### **Balance**

The student should be aware of and able to discuss the various balance tests and related procedures, which are used in the assessment of balance disorders.

These should include, but not exclusively:

- Caloric testing
- Dix-Hallpike Manoeuvre
- Vestibular rehabilitation
  - Management/counselling strategies /Goal setting

The student under supervision should be able to describe and demonstrate how to:

- Set-up and calibrate equipment
- Apply electrodes appropriately for optimum recording
- Apply the Health & Safety requirements
- Apply Infection control (s)
- Describe how to take a patient history
  - non-auditory contra-indications
- Be aware of the test protocols
- Be aware or recording parameters
- Relate results to potential pathologies

### **Paediatric Hearing Assessment**

The student should be aware of and able to discuss the different paediatric hearing test procedures, which are available in the assessment of a child's hearing.



These should include, but not exclusively:

- Distraction testing
- Performance testing
- Visual Reinforced Audiometry
- Co-operative and McCormack toy tests

The student whilst under supervision should be able to describe:

- The importance of history from Parent /Carer
- The role of the first tester and the second tester
- How to develop a rapport with child
- Ensures child understands the test requirements
- How using different test stimuli can maintain the child's attention
- Different conditioning techniques
- How to determine the lowest audible levels
- Recognise errors
- How to correctly records results and make suitable comments on the validity of the results
- How to use dB(A); dB(SPL); correction factors

### **Tinnitus / Hyperacusis**

The student should be aware of and able to discuss the current best practice in the management of Tinnitus and Hyperacusis Patients

- Consider possible mechanisms for tinnitus generation
- Be aware of the effects of tinnitus / hyperacusis on lifestyle

### **Hearing Science and Patient Management**

- Link theory to practice
- Apply the scientific principles covered in the academic modules to own practice.
- Make the appropriate choice of equipment/procedures.
- Use equipment appropriately to produce high quality results (reliable and repeatable).
- Perform patient investigations in a safe manner whilst undertaking appropriate infection control techniques.
- Perform patient rehabilitation techniques in a safe manner whilst undertaking appropriate infection control techniques.
- Record and document measurements and assists in the production of a factual report.
- Produce a Professional portfolio which cumulatively records / provides evidence of the skills, knowledge and attitudes gained demonstrating clear evidence of reflection.

## Section: 3.4

<b>Division:</b>	<b>Physiological Sciences</b>
<b>Theme:</b>	<b>Neurosensory Sciences</b>
<b>Specialism:</b>	<b>Neurophysiology</b>
<b>Years 2 and 3:</b>	<b>Work-based Training [30 Credits in total across both years]</b>

***Important Note: Work-based training does not have to be confined only to the work-base but elements may be taught in other environments for example a clinical skills laboratory, simulation centre, science laboratory.***

The indicative content for the work-based training modules in Year 2 is defined in the Year 3 module content to be achieved across Year 2 and 3.

The overall aim of this module is to give the student experience of Neurophysiology that ensures that the student can undertake the breadth of practice expected of a newly qualified Healthcare Science Practitioner in Neurophysiology. This is delivered through work placements in years 2 and 3 of the degree course.

Further work developing the framework for the accompanying Professional Portfolio across Healthcare Science and in the Specialist Pathways will define the levels of competency.

### **Learning Outcomes: Knowledge and Understanding**

On successful completion of this module the student will:

1. Demonstrate competence for tasks/ procedures in Neurophysiology according to the Association of Neurophysiological Science standards.
2. Demonstrates good communication skills with respect to Clinical history taking, Listening and interpersonal skills.
3. Critically applies the scientific principles covered in the academic Module within own practice.
4. Make the appropriate choice of equipment/procedure.
5. Use equipment to produce the highest quality results.
6. Perform patient investigations in safe manner whilst undertaking appropriate infection control techniques.
7. Undertake and document measurements and assists in the production of a factual report.
8. Critically review and evaluate departmental protocols in relation to the core skills in health and safety, human rights, patient identification, communication skills and management, quality assurance.
9. Understand the underpinning principles of routine investigations integrating knowledge of basic and clinical science.
10. Critically review and evaluate routine tasks in relation to neurophysiology.
11. Understand the test selection process.

### **Learning Outcomes: Practical Skills**

On successful completion of this module the student will:

1. Demonstrate competence for tasks/ procedures in Neurophysiology according to the Association of Neurophysiological Scientists standards including:
  - Plan and prepare for EEG- dedicated environment
  - Plan and prepare equipment
  - Prepare patient for EEG
    - Measure and apply electrodes accurately
    - Monitor and record routine Adult EEG with appropriate polygraphy
    - Implement and monitor activation procedures
    - Complete and report Adult EEG
  - Assess and record visual acuity
  - Assist with VEP
2. Demonstrates good communication skills with respect to
  - Clinical history taking
  - Counselling
  - Methods of communication
  - Listening and interpersonal skills
3. Critically applies the scientific principles covered in the academic Module within own practice.
4. Make the appropriate choice of equipment/procedure.
5. Use equipment to produce the highest quality results.
6. Perform patient investigations in safe manner whilst undertaking appropriate infection control techniques.
7. Undertake and document measurements and assists in the production of a factual report.

### **Learning Outcomes: Associated Personal Qualities and Behaviours (Professionalism)**

On successful completion of this module the student will:

1. Present complex ideas in simple terms in both oral and written formats.
2. Challenge discriminatory behaviour and language.
3. Adapt communication style and language to meet needs of listeners
4. Respect and upholds the rights, dignity and privacy of patients.
5. Establish patient-centred rapport.
6. Consistently focus on professional duty of care.
7. Reflect and review own practice to continuously improve personal performance.

8. Consistently operate within sphere of personal competence and level of authority.
9. Manage personal workload and objectives to achieve quality of care.
10. Actively seek accurate and validated information from all available sources.
11. Select and apply appropriate analysis or assessment techniques and tools.
12. Evaluate a wide range of data to assist with judgements and decision making.
13. Contribute to and co-operates with work of multi disciplinary teams.

### **Indicative Content**

Students are expected to gain knowledge, skills and experience of routine adult EEG and assisting in the recording VEPs.

### **Common content across test and management protocols**

- Ensure that all the necessary recording equipment for the investigation is working correctly.
- Ensure that the recording room is appropriate and safe to use in accordance with local Health and Safety rules.
- Verify the correct patient identification in accordance with local practice.
- Record adult routine EEG with activation procedures.
- Ascertain indications and contra-indications for the test being performed.
- Produce concise factual and numerical data pertinent to the recordings.
- Adhere to local infection control policies at all times.
- Maintain quality standards, assurances and controls for all activities performed.

### **Essential Skills**

#### Calibration

- Preparation of equipment such as the EEG machines, electrodes and transducers.
- Preparation of the equipment includes the calibration of the recording system

#### Patient history

- Obtain a relevant history from the patient, record the patient's state at the time of the investigation and to document the current medication, results of other relevant investigations

#### Prepare adult patient for EEG

- Plan the EEG taking into account the relevant physical and clinical and medical history.
- Prepare the patient an EEG in accordance with International standards

#### Monitor and record adult EEG

- Modify the investigation, taking into account the clinical problem and the EEG findings, in order to obtain accurate and useful results.
- Adjustment of controls, the application of additional electrodes or modification of the state of the patient.

#### Activation procedures

- Carry out activation procedures including hyperventilation and photic stimulation

#### Artefacts

- Recognise and minimise and eliminate any artefacts that may occur

#### Factual report writing

- Produce a factual report of the results on completion of normal and abnormal EEGs investigations

**The student should be able to describe, demonstrate and apply each of the following components when undertaking a routine adult EEG.**

#### Anatomy and Physiology Relevant to EEGs

- Basic functional division of the nervous system
- Major anatomical divisions of the nervous system, brain, cerebellum, brainstem and spinal cord
- Anatomy and physiology of cerebral circulation, cerebro-spinal fluid (CSF), cortical and sub-cortical structures, ventricles, meninges, reticular formation, cranial nerves, and thalamus and other body systems and their physiology
- Clinical features of disease of the nervous system
- The aetiology and symptomology of common pathological processes and the role of EEG in their investigation
- Effect of cardio-respiratory and metabolic disorders on the adult EEG
- Effect and use of prescribed and non-prescribed drugs in relation to adult EEG recordings

#### EEG equipment characteristics, calibration and classification

- Electrical safety classification of EEG equipment
- Specifications and characteristics of digital EEG recording systems
- The principles and purpose of internal and external calibration and testing of a complete recording system
- Principles underlying the use of basic test equipment, including multimeters and external signal generators and attenuators for calibration, and fault identification
- Detection and identification of equipment faults and procedures for the rectification of simple equipment faults
- The correct procedures for reporting faults

- The characteristics of electrodes and transducers used in neurophysiology
  - Characteristics of photic stimulators

#### EEG equipment operation

- The principles underlying the operational requirements of a recording system
- The structure and function of the component parts of a digital EEG recording system including:
  - Amplifiers
  - Filters and their effect on the recorded electrical activity
  - Principles of digitisation
- Methods of derivation and design of montages
- Amplifier input connections for bipolar and referential (common reference, average reference and source derivation) recording techniques.
- The use of machine controls, including their effect on the original signal and their use in highlighting salient features of the adult EEG.
- Principles and procedures for the selection and use of additional electrodes and transducers
- Relationship of the annotation to data on recording

#### Preparation and placing of electrodes for adult EEG

- Selection and choice of electrodes and transducers for neurophysiological recordings
- Electrode characteristics and maintenance
- Standard measurement/placement systems of electrodes and application in accordance with the International 10-20 system
- Application of various electrodes and transducers to record neurophysiological variables during the adult EEG
- Impedance measurement

#### EEG patterns

- Origin of the EEG signal
- Details of normal EEG activity and variants in adults
- Details of abnormal EEG activity and variants in adults
- Methods of relating the findings of routine adult EEG recordings to common pathological conditions and non-organic disorders
- Effects of medication on the adult EEG
- Effects of natural sleep on the EEG in adults

#### Activation procedures

- Rationale of the procedures for hyperventilation and photic stimulation during the EEG recording
- The physiology of hyperventilation and the physiological basis of photic stimulation
- Normal EEG variations of responses to hyperventilation and to photic stimulation in adults

- Atypical and abnormal EEG responses to hyperventilation and to photic stimulation in adults
- Contraindications to activation procedures in adults

#### Artefacts

- Characteristics and origins of physical and biological artefacts, methods of identification and means of elimination
- Characteristics and origins of non-biological, methods of identification and means of elimination

#### Factual report writing

- Organisational requirements for writing factual reports
- Definitions of standard terms used to describe data
- Normal values for frequency and amplitude, effects of medication (prescribed or not) on normal values and effects of aging
- The correlation of normal frequencies and amplitude to the normal rhythms/variants/phenomena of adult EEG
- The correlation of frequency and amplitude in pathological conditions and diseases: in relation to epilepsy, space occupying lesions, infection, metabolic disorders, cerebrovascular disease, head injury and psychiatric disorders.
- Describe accurately any clinical events and the EEG features associated with them.
- Effect of activation procedures on normal and abnormal values
- Effect of patient state on normal and abnormal values, including anxiety and drowsiness.

#### **The student should be able to describe, demonstrate and apply each of the following components when assisting a competent practitioner performs a Visual Evoked Potential**

##### Assist in the planning of recordings of VEPs

- Check the equipment to be used is in a safe condition, including relevant peripheral devices
- Characteristic and specifications of the EP machine and stroboscope and pattern reversal stimulator are appropriate
- Electrode characteristics and selection including:
  - Electrode potential
  - Silver/silver chloride electrodes
  - Maintenance of electrodes
- Ensure the environmental conditions are suitable for the planned investigation

##### Assist in the preparing of the patient for VEPs

- Ensure that all available data pertinent to the investigation upon the patient is available and checked for validity.

- Selection of the electrodes, methods of application and position appropriate to the VEP being tested.
- Determination of the electrode placement with reference to the VEP being studied
- Principles and methods of calculation of the angular size of the pattern stimulator
- Measurement and accurate documentation of patients' visual acuity

Assist in the recording of VEPs

- Basic principles relevant to recording VEPs
- Principle of derivation of montages and machine settings for recording VEPs
- Types and effects of physiological and non-biological artefacts and non-pathological factors on the VE.
- Components of the VEP and physiological origin
- Morphology and nomenclature of VEPs

### Section: 3.5

**Division: Physiological Sciences**

**Theme: Neurosensory Sciences**

**Specialism: Ophthalmic and Vision Science**

**Years 2 and 3: Work-based Training [30 Credits in total across both years]**

***Important Note: Work-based training does not have to be confined only to the work-base but elements may be taught in other environments for example a clinical skills laboratory, simulation centre, science laboratory.***

The indicative content for the Specialist Work-based Training Modules in Year 2 is defined in the Year 3 module content to be achieved across Year 2 and 3. The overall aim of this module is to give the student experience of Ophthalmic and Vision Science that ensures that the student can undertake the full breadth of practice expected of a newly qualified Healthcare Science Practitioner in Ophthalmic and Vision Science. This module is delivered through work placements in years 2 and 3 of the degree course and learning in other environments for example clinical skills centres, simulation centres, home visits.

The indicative content for the Specialist Work-based Training Modules in Year 2 is defined in the Year 3 module content to be achieved across Year 2 and 3.

Further work developing the framework for the accompanying Professional Portfolio across Healthcare Science and in the Specialist Pathways will define the levels of competency.



### **Learning Outcomes: Knowledge and Understanding**

On successful completion of this module the student will:

1. Critically review and evaluate departmental protocols in relation to the core skills in health and safety, human rights, patient identification, communication skills and management, quality assurance.
2. Understand the underpinning principles of routine investigations integrating knowledge of basic and clinical science.
3. Critically review and evaluate routine tasks in relation to ophthalmic and Vision Science.
4. Understand the test selection process.
5. Produce a professional portfolio which cumulatively records / provides evidence of the skills, knowledge and attitudes gained.

### **Practical Learning Outcomes**

On successful completion of this module the student will:

1. Produce a professional portfolio which cumulatively records / provides evidence of the skills, knowledge and attitudes gained.
2. Critically apply the scientific principles covered in the academic modules within own practice.
3. Make the appropriate choice of equipment/procedure.
4. Use equipment to produce the highest quality results.
5. Perform patient investigations in safe manner whilst undertaking appropriate infection control techniques.
6. Undertake and document measurement and assist in the production of a factual report.
7. Produce a professional portfolio which cumulatively records / provides evidence of the skills, knowledge and attitudes gained

### **Learning Outcomes: Associated Personal Qualities and Behaviours (Professionalism)**

On successful completion of this module the student will:

1. Present complex ideas in simple terms in both oral and written formats.
2. Challenge discriminatory behaviour and language.
3. Adapt communication style and language to meet needs of listeners.
4. Respect and uphold the rights, dignity and privacy of patients.
5. Establish patient-centred rapport.
6. Consistently focus on professional duty of care.
7. Reflect and review own practice to continuously improve personal performance.

8. Consistently operate within sphere of personal competence and level of authority.
9. Manage personal workload and objectives to achieve quality of care.
10. Actively seek accurate and validated information from all available sources.
11. Select and apply appropriate analysis or assessment techniques and tools.
12. Evaluate a wide range of data to assist with judgements and decision making.
13. Contribute to and co-operates with work of multi disciplinary teams.

### **Indicative Content**

The overall aim of this module is to give the student experience of ophthalmic and vision science that ensures that the student can undertake the breadth of practice expected of a newly qualified Healthcare Science Practitioner.

Further work developing the framework for the accompanying Professional Portfolio across Healthcare Science and in the Specialist Pathways will define the levels of competency.

### **Imaging of the posterior segment**

- *Fundus cameras*: Instrumentation, technique, focusing, difficulties and troubleshooting, artefacts, principles of angiography, use of filters, digital processing, principles of brightness, saturation and hue, additive and subtractive colour mixing, colourimetry
- *Optical Coherence Tomography*: Principles of low coherence interferometry, instrumentation, techniques, image acquisition, presentation and analysis, artefacts and troubleshooting; clinical applications and interpretation
- *Scanning Laser Ophthalmoscopy*: Confocal principle, instrumentation, image acquisition, presentation and analysis, artefacts and troubleshooting; clinical applications and interpretation
- *Scanning Laser Polarimetry*: Principles of polarisation and birefringence, instrumentation, image acquisition, presentation and analysis, clinical applications and interpretation, limitations, artefacts and troubleshooting
- *Ultrasonography*: Principles of ultrasound, A- and B- scan modalities, clinical applications

### **Imaging of the anterior segment**

- Principles and methods to include slit lamp photography, OCT, Scheimpflug imaging

### **Measurement of ocular structures**

- Pachymetry and biometry

### **Data management and processing**

Computer acquisition, analysis, storage, and disposal of ophthalmic imaging and measurement data

## Section 4.0 Assessment

### 4.1 Assessment

The responsibility for designing and assessing student learning lies with the Higher Education Institution and will be explained in the **Course Handbook**. However, there will also be continuous assessment across the 3-year training period in the workplace, using a series of Directly Observed Procedures, Case Based Discussions and mini Clinical Examination. Examples of CbDs, DOPS and mini-Cex can be found at Appendix 1 and 2.

**Direct Observation of Practical Skills (DOPS)** is the observation and evaluation of a procedural/technical or practical skill performed by a student in a live environment.

**Case based discussion (CbD)** is designed to provide structured teaching and feedback in a particular area of clinical or technical practice by evaluating decision making and the interpretation and application of evidence. It also enables the discussion of the context, professional, ethical and governance framework of practice, and in all instances, it allows students to discuss why they acted as they did. CbDs are used throughout training and should encourage a reflective approach to learning.

**Mini Clinical Examinations (mini-Cex)** are a short snapshot of practitioner/patient interaction. It is designed to assess the clinical skills, attitudes and behaviours of students essential to providing high quality care.

All DOPS, CbDs and mini-Cex will be completed electronically and analysed on a central database. Each student will be required to complete a portfolio in which all of these documents are kept; further detail can be found overleaf.

The following indicate the minimum number of formal work-based assessments that should be completed in Year 1, Year 2 and Year 3.

Year 1	Year 2	Year 3
2 DOPS	4 DOPS	4 DOPS
1 CBD	1 CBD	2 CBD
1 Mini-Cex	1 Mini-Cex	2 Mini-Cex
Competencies	Competencies	Competencies

It is the responsibility of the student to maintain their own portfolio and ensure all assessments are done on time.

## **4.2 Competency Log Book**

The competencies form the foundation of the work-based training programme and are an important part of the portfolio and the student's record of competence. Competencies are transferable across learning outcomes and do not need to be undertaken twice where they are repeated in the programme. Where they are repeated reference should be made to the point at which this competency has been previously completed.

Competencies are cumulative and as such not all competencies have to be completed within the relevant module. All competencies should be completed by the end of the programme.

This manual provides examples of areas of application or evidence required to demonstrate competence. Students are expected to utilise different tools, resource and media within the local laboratory to demonstrate each area of competence.

Some competencies are exit competencies. These are described as such in the recognition that they require a longer time and experience to acquire and therefore cannot be limited to one specific module or individual learning outcome.

## Section 4.3

### Generic Module

#### Years 1: Work-based Training

#### Learning Outcome 1

Performs the generic skills, demonstrates adherence to health and safety, professional behaviour and the knowledge and understanding defined in the work-based module for Year 1.

Competency	Reviewer	Date	Comments/Evidence
The student will be able to:			
Demonstrate the six stage hand-washing technique.			
Demonstrate basic life support skills.			
Demonstrate effective communication skills within the healthcare environment.			
Demonstrate safe working practice in the workplace.			
Demonstrate the standards of dress and professional behaviour required in the workplace.			

## Section 4.4

**Division:** Physiological Sciences  
**Theme:** Neurosensory Science  
**Specialism:** Audiology  
**Years 2 and 3:** Work-based Training [30 Credits]

### Learning Outcome 2

**Demonstrates proper use of a basic item of clinical equipment in the Audiology Placement centre.**

<b>Competency</b>	<b>Reviewer</b>	<b>Date</b>	<b>Comments/Evidence</b>
The student will be able to:			
Identify the basic range of equipment used in the Audiology Placement centre.			
Explain the use of the basic range of equipment.			
<ul style="list-style-type: none"><li>• Demonstrate how the equipment is set-up</li></ul>			
<ul style="list-style-type: none"><li>• Describe the basic components</li></ul>			
<ul style="list-style-type: none"><li>• Demonstrate on a volunteer how the equipment could be used</li></ul>			
Discuss some of the Health and Safety issues which may be associated with the equipment.			

### Learning Outcome 3

**Demonstrate the ability to summarise the range of patients that access the Audiology Placement centre and the different healthcare pathways.**

<b>Competency</b> The student will be able to:	<b>Reviewer</b>	<b>Date</b>	<b>Comments/Evidence</b>
List the range of patients accessing the Audiology Placement centre.			
Summarise the different patient referral patterns.			
Describe some of the healthcare pathways available.			
Recognise the different healthcare professionals working within the Audiology Placement centre.			
Recognise how the Audiology Placement centre services relate to other local NHS services.			

#### Learning Outcome 4

**Demonstrates pre-session preparation and continuous care for each patient contact.**

<b>Competency</b>	<b>Reviewer</b>	<b>Date</b>	<b>Comments/Evidence</b>
The student will be able to:			
Ensure the test environment is safe for themselves and the patient.			
Ensure that all the required equipment is working correctly and safely, including any daily calibration requirements.			
Retrieve the patient's referral, file or medical notes.			
Review and critique the preliminary patient data or information available.			
Confirm the patient identification details.			
Identify himself or herself to the patient.			
Treat the patient with respect, dignity, rights and privacy.			
Explain the procedure to the patient and gain consent.			
Use of safe manual handling practices, infection control, COSHH and Risk management guidelines.			
Select equipment settings appropriate to the audiological test requirements.			



Recognise when the results need onward referral to a more senior audiologist or specialist professional			
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## Learning Outcome 5

**Demonstrate the ability to obtain a comprehensive patient history.**

<b>Competency</b>	<b>Reviewer</b>	<b>Date</b>	<b>Comments/Evidence</b>
The student will be able to:			
Put the patient at ease and build rapport at the beginning of the session.			
Use 'Problem Orientated Medical questioning' to obtain a patient history.			
Use a variety of questioning techniques in a logical sequence <ul style="list-style-type: none"><li>• Direct/in-direct</li><li>• Open/closed</li><li>• Supplementary</li></ul>			
Demonstrate listening skills.			
Take contemporaneous notes.			
Assimilate and ensure understanding with appropriate feedback to patient.			
Clarify any misunderstandings in the patient history.			
Write up history notes in a legible and readable manner, sign and dates or completes appropriate electronic records.			

**Learning Outcome 6**  
**Demonstrate the ability to Perform Otoscopy.**

<b>Competency</b>	<b>Reviewer</b>	<b>Date</b>	<b>Comments/Evidence</b>
The student will be able to:			
Explain the importance of when to perform otoscopy in Audiology.			
Apply appropriate hygiene standards (before, during and after otoscopy).			
Position themselves and patient to be able to perform otoscopy in a safe manner without causing distress or discomfort to the patient.			
Modify their technique according to patient age, disability or needs.			
Report any observations and/or findings.			
Identify any abnormal findings.			
Explain their findings to the patient appropriately.			
Critique the otoscopy findings to the reason for referral and records initial management strategy.			
Make appropriate referral as required to other NHS services or Senior Practitioner.			

## Learning Outcome 7

**Demonstrate the ability to perform Not-masked Pure tone Audiometry.**

<b>Competency</b>	<b>Reviewer</b>	<b>Date</b>	<b>Comments/Evidence</b>
The student will be able to:			
Ensure the test environment and equipment is appropriately calibrated and is safe to use.			
Apply appropriate hygiene standards.			
Confirm the patient ID, explain the test procedure and obtain consent.			
Use the patient history to select the initial starting point of the test.			
Give appropriate patient instructions and check their understanding.			
Demonstrate the correct placement of supra-aural headphones and bone-conduction transducer.			
Perform threshold determination in accordance with the current published recommended procedure.			
Modify their technique according to patient performance or ability.			
Correctly plot the results.			
Identify any potential errors or factors that might affect the results.			
Assimilate and interpret the not-masked PTA test results obtained.			

## Learning Outcome 8

### Demonstrate the ability to perform Masked Pure tone Audiometry.

Competency	Reviewer	Date	Comments/Evidence
The student will be able to:			
Continue to ensure the test environment and equipment is appropriately calibrated and is safe to use.			
Continue to apply appropriate hygiene standards.			
Utilise the results of the NOT-masked pure tone audiometry, to select the initial masking level.			
Give appropriate patient instructions and check for patient understanding.			
Demonstrate the correct placement of supra-aural headphones, or bone-conduction transducer and insert masker earphone.			
Perform threshold determination using masking in accordance with the current published recommended procedure.			
Modify their technique according to patient performance or ability.			
Correctly plot the results.			
Identify any potential errors or factors that might affect the results.			
Assimilate the masked PTA test results and interpret them in conjunction with other audiological results obtained.			
Decide and agree a management plan with the patient.			

## Learning Outcome 9

**Demonstrate the ability to set-up and perform Speech audiometry.**

<b>Competency</b>	<b>Reviewer</b>	<b>Date</b>	<b>Comments/Evidence</b>
The student will be able to:			
Ensure the test environment and equipment is appropriately calibrated and is safe.			
Apply appropriate hygiene standards.			
Describe the limitations of Speech Audiometry within clinical practice.			
Use the patient history and any audiological test data available, to select the initial starting point for speech audiometry.			
Confirm the patient ID, explain test procedure and obtains consent.			
Give appropriate patient instructions and check for patient understanding.			
Demonstrate the correct placement of supra-aural headphones, bone-conduction transducer or speaker.			
Perform the required speech audiometric measures in accordance with best practice.			

Make use of masking techniques in speech audiometry in accordance with best practice.			
Modify their technique according to patient performance or ability.			
Correctly plot the results.			
Identify any potential errors or factors that might affect the results.			
Assimilate the Speech audiometry results and interpret them in conjunction with other audiological results obtained.			

## Learning Outcome 10

**Demonstrate the ability to perform and interpret Tympanometry.**

<b>Competency</b>	<b>Reviewer</b>	<b>Date</b>	<b>Comments/Evidence</b>
The student will be able to:			
Ensure test environment and equipment is appropriately calibrated and is safe.			
Apply appropriate hygiene standards.			
Use the patient history and any audiological test data available, select the initial starting point for Tympanometry.			
Confirm the patient ID, explain the test procedure and obtain consent.			
Give appropriate patient instructions and check for patient understanding.			
Obtain a probe tip seal safely and without causing discomfort to the patient.			
Record the middle ear pressure, middle ear compliance and ear canal volume in accordance with the current published recommended procedure.			
Modify their technique according to patient performance or ability.			
Correctly plot the results.			
Identify any potential errors or factors that might affect the results.			
Assimilate the tympanometry results and interpret them in conjunction with other audiological results obtained.			



**Learning Outcome 11****Demonstrate the ability to perform and interpret an Acoustic Reflex Threshold.**

<b>Competency</b> The student will be able to:	<b>Reviewer</b>	<b>Date</b>	<b>Comments/Evidence</b>
Ensure test environment and equipment is appropriately calibrated and is safe.			
Apply appropriate hygiene standards.			
Use the patient history and any audiological test data available, select the initial starting point of the test.			
Confirm the patient ID, explain the test procedure and obtain consent.			
Give appropriate patient instructions and check for patient understanding.			
Obtain a probe tip seal safely without causing discomfort to the patient.			
Record an appropriate acoustic reflex threshold in accordance with best practice.			
Modify their technique according to patient performance or ability.			

Correctly plot the results.			
Identify any potential errors or factors that might affect the results.			
Assimilate the Acoustic Reflex Threshold results and interpret them in conjunction with other audiological results obtained.			

**Learning Outcome 12****Demonstrate the ability to take an aural impression.**

<b>Competency</b> The student will be able to:	<b>Reviewer</b>	<b>Date</b>	<b>Comments/Evidence</b>
Ensure test environment and equipment is safe.			
Apply appropriate hygiene standards.			
Confirm the patient ID, explain the test procedure and obtain consent.			
Give appropriate patient instructions and check for patient understanding.			
Examine the pinna and perform otoscopy and considers any contra-indications.			
Insert an ear-tamp and take an impression in accordance with the current published recommended procedure.			
Modify their technique according to patient performance, age or ability.			
Assess and identify any potential errors or factors that might affect the finished impression.			

### Learning Outcome 13

#### Demonstrate the ability to perform Real Ear Measurements (REM).

Competency	Reviewer	Date	Comments/Evidence
The student will be able to:			
Ensure the test environment and equipment is safe.			
Apply appropriate hygiene standards.			
Select the appropriate REM parameters, calibrate and perform the initial non patient test requirements.			
Confirm patient ID, explain test procedure and obtain consent.			
Give appropriate patient instructions and checks for patient understanding.			
Select the appropriate REM parameters, calibrate and perform the patient test measures.			
Review, modify and adjust the REM measures taking account of the patient need in accordance with the current published recommended procedure.			
Assess and identify any potential errors or factors that might affect the REM recordings.			

## Learning Outcome 14

Demonstrate the ability to use a Hearing Aid test box.

Competency	Reviewer	Date	Comments/Evidence
The student will be able to:			
Ensure the test environment and equipment is safe.			
Apply appropriate hygiene standards.			
Set-up the hearing aid test box.			
Perform hearing aid measurements in accordance with the appropriate ISO standards.			
Compare and contrast the hearing aid test box results to the Manufacturers published specifications for the same digital hearing aid.			
Identify the correct and any incorrect functions of the hearing aid and act upon this.			
Identify any potential errors or factors that might affect the hearing aid test box measures.			

**Learning Outcome 15****Demonstrate the ability to perform routine hearing aid maintenance and checks.**

<b>Competency</b> The student will be able to:	<b>Reviewer</b>	<b>Date</b>	<b>Comments/Evidence</b>
Ensure test environment and equipment is safe.			
Apply appropriate hygiene standards.			
Extract appropriate information from the patient on the nature of the hearing aid problem or issues related to hearing effectively.			
Perform subjective listening and/or objective hearing aid measures to establish faults in accordance with the appropriate ISO standards.			
Problem solve, initiate repair and ensure patient expectation has been met.			
Agreed further management requirements with the patient.			
Debrief and/or advise, the patient appropriately and complete records.			

## Learning Outcome 16

**Demonstrate the ability to perform an adult Hearing Assessment.**

<b>Competency</b>	<b>Reviewer</b>	<b>Date</b>	<b>Comments/Evidence</b>
The student will be able to:			
Apply appropriate hygiene standards and ensure test environment and equipment is safe for themselves and the patient.			
Decide and use the most appropriate communication style with the patient.			
Confirm the patients ID, explain test procedure and obtain consent.			
Take a patient history to assist in deciding on hearing needs.			
Perform appropriate diagnostic audiological testing to support the patient management strategy, modify according to patient need.			
Recognise the presence of tinnitus/hyperacusis, its affect on the test protocol and patient life style.			
Use the relevant patient history and any audiological test data available to decide on a suitable and justified patient management strategy.			
Modify technique according to patient performance or ability.			
Discuss and agree with the patient the proposed hearing healthcare plan to ensure that an 'expert' opinion is given to the patient in order for them to be informed about their choices.			
Initiate a hearing healthcare plan.			

### Learning Outcome 17

#### Demonstrate the ability to explain the test requirements for a Paediatric Hearing Assessment.

<b>Competency</b> The student will be able to:	<b>Reviewer</b>	<b>Date</b>	<b>Comments/Evidence</b>
Apply appropriate hygiene standards and ensure test environment and equipment is safe for themselves and the patient.			
Decide and use the most appropriate communication style with the patient, parents or carers.			
Confirm patient ID, explains test procedure and obtains consent.			
Explain the appropriate speech recognition/ audiological testing to support the suggested patient management strategy.			
<p>Describe the key information contained within the</p> <ul style="list-style-type: none"> <li>• patient history</li> <li>• child's developmental stage</li> <li>• audiological test data available</li> <li>• child's /parent /carers expressed need</li> </ul> <p>to decide on a suitable patient management strategy and how the test(s) can be modified to match patient need, age or ability.</p>			
Discuss and agree with a Senior Audiologist the appropriate feedback, which could be given to the patient/parent/guardian/carer.			



### Learning Outcome 18

**Demonstrate the ability to perform an assessment on a patient who has never worn a hearing aid before.**

*This includes the hearing aid selection, its programming, explanation of its functionality and initial adaptation period.*

<b>Competency</b> The student will be able to:	<b>Reviewer</b>	<b>Date</b>	<b>Comments/Evidence</b>
Apply appropriate hygiene standards and ensure test environment and equipment is safe for themselves and the patient.			
Decide and use the most appropriate communication style with the patient.			
Confirm the patient ID, explain procedure and obtain consent.			
Assimilate patient history, audiological test results and patients expressed need to decide on a suitable patient rehabilitation management strategy.			
Assess the patient's approach to their hearing disability and the way it may affect their management.			
Decide on the appropriate use of: <ul style="list-style-type: none"><li>• Personal amplification</li><li>• Assistive listening devices</li><li>• Coping Strategies</li><li>• Communication strategies</li><li>• Non-amplification advice</li><li>• Benefit of monaural/binaural provision.</li></ul>			
Discuss and agree with the patient the proposed personal hearing healthcare plan.			

Recognise the presence of tinnitus/hyperacusis and the way it may affect the patient management.			
Select and programme the hearing aid system to a prescribed amplification rational in accordance with current published recommended procedures.			
Explain the functions and controls of the device to the patient and /or 'significant other'. Ensure the patient understands and can manipulate the device.			
Discuss acclimatisation techniques and expectations of the new amplified acoustical environment the patient can expect, in particular focusing on sounds that potentially maybe unexpected or sudden.			
Use a range of outcomes measures to evaluate intervention and benefit.			
Discuss future management options, follow-up or long term services.			
Recognise the need to involve or refer to other Agencies or healthcare provider as part of the care plan.			
Initiate hearing healthcare plan.			

### Learning Outcome 19

**Demonstrate the ability to perform a re-assessment on a patient who already wears a hearing aid.**

<b>Competency</b> The student will be able to:	<b>Reviewer</b>	<b>Date</b>	<b>Comments/Evidence</b>
Apply appropriate hygiene standards and ensure test environment and equipment is safe for themselves and the patient.			
Decide and use the most appropriate communication style with the patient.			
Confirm the patient ID, explain procedure and obtain consent.			
Use the obtained patient history and any subjective reported changes or objective measured changes in the audiological test data to decide on a suitable patient rehabilitation management strategy.			
Assimilate the patient history, audiological test results and patients expressed need into one possible hearing healthcare plan.			
Decide on the appropriate use of: <ul style="list-style-type: none"><li>• Personal amplification</li><li>• Assistive listening devices</li><li>• Coping Strategies</li><li>• Communication strategies</li><li>• Non-amplification advice</li><li>• Benefit of monaural/binaural provision.</li></ul>			
Discuss and agree with the patient the proposed personal amplification healthcare plan.			

If appropriate, select, programme and explain to the patient the hearing aid system to a prescribe amplification rational in accordance with current published recommended procedures or guidelines.			
Explain the functions and controls of the changed device to the patient and /or 'significant other'. Ensure the patient understands and can manipulate the device.			
Discuss acclimatisation techniques and expectations of the changed amplified acoustical environment.			
Use a range of outcomes measures to evaluate intervention and benefit.			
Discuss future management options, follow-up or long term services.			
Recognise the need to involve or refer to other Agencies or healthcare provider as part of the care plan.			
Initiate hearing healthcare plan.			

**Learning Outcome 20****Demonstrate the ability to perform a follow-up as part of the long-term rehabilitative healthcare plan.**

<b>Competency</b> The student will be able to:	<b>Reviewer</b>	<b>Date</b>	<b>Comments/Evidence</b>
Apply appropriate hygiene standards and ensure test environment and equipment is safe for themselves and the patient.			
Decide and use the most appropriate communication style with the patient.			
Confirm the patient ID, explain procedure and obtain consent.			
Use the past patient history and any reported subjective changes since the last visit to decide whether there is a need to change the patient rehabilitation management strategy.			
Discuss and agree with the patient the proposed change in the personal amplification healthcare plan.			
Make adjustments as appropriate to the patients the hearing aid system based upon a rational in accordance with current published recommended procedures or guidelines.			

Use a range of outcomes measures to evaluate intervention and benefit.			
Discuss future management options, follow-up or long term services.			
Recognise the need to involve or refer to other Agencies or healthcare provider as part of the care plan.			
Initiate hearing healthcare plan.			

### Learning Outcome 21

**Demonstrate the ability to produce a hearing loss information/advice plan as part of a hearing assessment, or hearing aid selection, programming, fitting or the long-term rehabilitative healthcare of a patient who is experiencing a hearing impairment.**

<b>Competency</b>	<b>Reviewer</b>	<b>Date</b>	<b>Comments/Evidence</b>
The student will be able to:			
Explain how, when, where aural rehabilitation can take place in an everyday setting.			
Give reasons for the different communication strategies and conversational styles that are used in everyday listening situations.			
Decide and use the most appropriate interpersonal style with the patient.			
Explain what factors can influence the reception of listening and how changes to the environment and good conversational skills can help.			
Explain what are the differences between formal /informal auditory training and communication handicap and /or disability.			
Appreciate the socio-economic and psychological factors that can influence every day communication.			
Give an explanation of different hearing strategies, or training models that may be used with hearing aids or similar devices.			
Decide on a hearing loss information/advice plan and discuss the reasons for its implementation with a senior audiologist.			

Suggest a range of outcomes measures that can be used to evaluate the rehabilitation advice or intervention and the possible benefit that might be derived by the patient.			
Discuss additional hearing advice, or communication training options available locally for patient follow-up or long term support.			
Describe how hearing aids or similar devices, hearing advice or specialist rehabilitative advice could be used in the patients everyday life.			



## Learning Outcome 22

**Describe and demonstrate the ability to give support (as required) to a Senior Audiologist in the following:**

*(see footnote<sup>1</sup>)*

- Diagnostic and /or threshold Auditory Brainstem Responses
- Transient Oto-acoustic Emissions
- Videonystagmography / Electonystagmography
- Bi-thermal Caloric Measures
- Vestibular rehabilitation
- Hearing Assessment in neonatal screening

<b>Competency</b>	<b>Reviewer</b>	<b>Date</b>	<b>Comments/Evidence</b>
The student will be able to:			
Assist with the equipment set-up and its calibration.			
Appreciate the role differences between the tester/assistant.			
Recognise the different test and stimuli requirements, its protocols and current professional recommended procedure.			
Participate and offer support at the request of the Senior Audiologist.			
Comprehend how errors occur and how the correction factors need to be applied to give meaning results.			

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<sup>1</sup> *In some Audiology Placement centres it may not always be possible to complete all the above topics either due to time constraints, staff or equipment availability; the aim should be to extend the students understanding and knowledge of best practice techniques within the audiological clinical environment, not necessarily their competencies.*

## Section 4.5

**Division:** Physiological Sciences  
**Theme:** Neurosensory Sciences  
**Specialism:** Neurophysiology  
**Years 2 and 3:** Work-based Training [30 Credits]

These tables must be completed by the student and the trainer together throughout the period of training and will form an important part of the e-portfolio and the student's record of competence.

### Learning Outcome 2

**Demonstrate the ability to perform the internal calibration procedure on neurophysiological recording equipment.**

Competency	Reviewer	Date	Comments/ Evidence
The student will be able to:			
Check the electrical safety of the machine <ul style="list-style-type: none"><li>○ Safety rating</li><li>○ Last safety check</li><li>○ Safe condition of cables and connectors</li></ul>			
Check that there is adequate storage medium for the test to be carried out and the date and time are correct.			
Check the number of channels that are enabled and that the sampling rate is appropriate for the procedure to be performed.			
Check that default setting are appropriate for the procedure to be performed ( <i>Filters, Sensitivity, Time base and Montage/montages</i> ).			
Ensure that the function of the low frequency filter is explained and demonstrated using a square wave signal.			

Explain and check the function of the high and low frequency filter s are explained and demonstrated using a square wave signal.			
Check the default sensitivity setting using a square wave signal.			
Check the default sensitivity setting using a square wave signal.			
Check the time base and time marker.			
Check a range of different time bases.			
Check the cursors.			
Check that the stimulator is functioning and the stimulus parameters to be used are correct – ( <i>Stimulation rate and where appropriate stimulus duration</i> ).			
Make a permanent record of the procedure.			
Identify any faults, report and rectify (if possible) in accordance with departmental procedure.			

### Learning Outcome 3

Demonstrate the ability to perform the external calibration procedure on neurophysiological recording equipment.

Competency	Reviewer	Date	Comments/ Evidence
The student will be able to:			
Select and connect correct external devices to the neurophysiological recorder correctly for the measurement of frequency response.			
Select correct input signal voltage, frequency/frequencies and type of wave ( <i>square/sine</i> ) on the signal generator for the measurement of frequency response curves.			
Select correct display parameters on the neurophysiological recorder for the measurement of frequency response curves.			
Test the machine over a range of frequencies using a number of different bandwidths ( <i>changing both low and high frequency filters</i> ) including one where the 50Hz notch filter is on.			
Produce an appropriate set of graphs showing the response from a number of bandwidth including one where the 50Hz notch filter is on are prepared.			
Calculate the machine's turnover frequency for appropriate filter settings and show on the graph.			
Produce a written assessment formally.			

Select correct external devices and connect to the neurophysiological recorder correctly for the measurement of Common Mode Rejection Ratio (CMRR).			
Select correct input signal voltage, frequency/frequencies and type of wave ( <i>square/sine</i> ) on the signal generator for the measurement of Common Mode Rejection Ratio (CMRR).			
Select correct display parameters on the neurophysiological recorder for the measurement of Common Mode Rejection Ratio (CMRR).			
Calculate the common mode rejection ratio for a number of the recorder channels.			
Write up the assessment is formally showing the calculation of the common mode rejection ratio in decibels (dB).			
Select correct external devices and connect to the neurophysiological recorder correctly for the measurement of internal noise.			
Select correct input signal voltage, frequency/frequencies and type of wave ( <i>square/sine</i> ) on the signal generator for the measurement of internal noise.			
Measure the internal noise of a number of the recorders channels.			
Produce a formal write-up of the assessment.			

#### Learning Outcome 4

**Demonstrate the ability to plan and prepare for the recording of an EEG.**

<b>Competency</b>	<b>Reviewer</b>	<b>Date</b>	<b>Comments/ Evidence</b>
The student will be able to:			
Check all available data pertinent to the investigation upon the patient is available and valid.			
Evaluate the above data and plan the investigation. Where the available data is insufficient to produce a valid plan, a request for further data is made, or the matter referred to senior staff.			
Select appropriate electrodes and transducers.			
Make the necessary quantity and type of consumables available in accordance with the requirements of the investigation.			
Confirm the patient's identity to match that on the referral documents.			
Enter the patient's information and identify on the recording system.			

Communicate effectively with the patient/carers. Explain the test in a manner liable to ensure that their co-operation is enlisted.			
Obtain a full but concise history, relevant to the investigation and record accurately.			
Mark electrode sites are accurately in accordance with the recommended placement system, ensuring (as far as possible) symmetry in electrode distances - accuracy should be within +/-0.5cm.			
Correctly and securely attach electrodes and transducers - accuracy should be within +/- 0.5cm.			
Securely position all leads and check connections to the head box as correct.			
Assist the patient to reach a position that is comfortable and which optimises the quality of the recording (according to local procedure).			
Confirm contact impedances as appropriate to the electrode type and to the patient.			

## Learning Outcome 5

### Demonstrate the ability to record a resting adult EEG.

Competency	Reviewer	Date	Comments/ Evidence
The student will be able to:			
Place electrodes for the recording of an EEG.			
Explain recording procedure to the patient.			
Record a calibration pulse at the start of the recording and check the sensitivity and time base of the machine.			
Use the reference montage at the start of the recording to view the EEG.			
Use a range of montages ( <i>including bipolar and common average references</i> ) during the recording.			
Use appropriate control setting during the recording and modify to optimise the recording if required.			
Identify artefacts and eliminate or minimise and annotate.			
Modify electrode positions - apply additional electrodes and transducers and use non-standard montages, according to the patient characteristics, clinical problem and findings during the recording.			
Record polygraphic variables, as indicated by the clinical condition of the patient, ensuring filter (and other) settings are appropriate.			
Record periods of eye opening and closure. Annotate the EEG recording accurately and legibly.			
Identify the need to modify or extend the current investigation and refer to a senior member of staff for advice when required.			



## Learning Outcome 6

**Demonstrate the ability to implement and monitor hyperventilation.**

<b>Competency</b>	<b>Reviewer</b>	<b>Date</b>	<b>Comments/ Evidence</b>
The student will be able to:			
Review patient information for the relevance of hyperventilation.			
Check that the proposed activation procedure is not contraindicated and is performed to department guidelines.			
Accurately identify where indications that activation should not proceed and refer to a senior member of staff, if appropriate.			
Provide the patient with a clear and accurate explanation of the procedure and encourage them to clarify any areas of concern.			
Treat patients in a manner, which is likely to encourage co-operation and confidence and maintain their dignity.			
Position the patient for hyperventilation.			
Implement the activation procedure correctly and safely, in accordance with conventional protocol and encourage the patient to co-operate.			
Annotate details relevant to the procedure (time, effort etc).			
Continuously monitor the activation procedure and accurately record changes in the condition of the patient.			
Accurately identify indications that the activation procedure should be discontinued and respond to promptly.			

## Learning Outcome 7

**Demonstrate the ability to implement and monitor photic stimulation.**

<b>Competency</b>	<b>Reviewer</b>	<b>Date</b>	<b>Comments/ Evidence</b>
The student will be able to:			
Review patient information for the relevance of photic stimulation.			
Check that the proposed activation procedure is not contraindicated and perform to department guidelines.			
Accurately identify indications that activation should not proceed and refer to a senior member of staff.			
Provide the patient with a clear and accurate explanation of the procedure, and encourage them to clarify any areas of concern.			
Treat patients in a manner that is likely to encourage co-operation and confidence, and maintain their dignity.			
Obtain the patient's consent to the procedure.			
Position the patient for photic stimulation.			
Implement the activation procedure correctly and safely in accordance with conventional protocol and ensure the patient is encouraged to co-operate.			

Annotate details relevant to the procedure.			
Continuously monitor the activation procedure, and ensure changes in the condition of the patient are accurately recorded.			
Identify indications that the activation procedure should be discontinued and respond promptly.			

## Learning Outcome 8

**Demonstrate the ability to complete an EEG recording.**

<b>Competency</b>	<b>Reviewer</b>	<b>Date</b>	<b>Comments/ Evidence</b>
The student will be able to:			
Remove electrodes and transducers and clean the site with minimum discomfort.			
Clearly and accurately inform the patient of the procedure for notification of results of the investigation.			
Ensure that any required transporting/portering service and escorts are made available to coincide with the completion of the investigation.			
Clean equipment and environment (and where appropriate sterilise it), in accordance with local policy and leave it in a condition for reuse.			
Adhere to local infection control and hand hygiene policies throughout the investigation.			

## Learning Outcome 9

Demonstrate the ability to factually report an EEG.

Competency	Reviewer	Date	Comments/ Evidence
The student will be able to:			
Document handedness, last meal and medication.			
Document a clinical history obtained from the patient.			
Analyse the background EEG.			
Document the electrocardiogram.			
Document and measure ( <i>where appropriate</i> ) the frequency, amplitude, amount and distribution of the four EEG frequency bands ( <i>delta, theta, alpha and beta</i> ).			
Document other activity present in the EEG as far as type of waveform, amplitude, distribution and duration of discharge.			
Document hyperventilation as far as how it was performed describing any physiological changes caused by the exercise.			
Document any other changes in the EEG due to hyperventilation.			
Document photic stimulation and abnormal variants associated.			
Document any other changes in the EEG due to photic stimulation.			
Document any clinical events and the EEG features accompanying them.			

### Learning Outcome 10

Demonstrate the ability to assist with the planning and preparing for the recording of an adult visual evoked potential.

<b>Competency</b> The student will be able to:	<b>Reviewer</b>	<b>Date</b>	<b>Comments/ Evidence</b>
Assist the Healthcare Scientist to ensure all available data pertinent to the patient is available and to plan the investigation.			
Assist the Healthcare Scientist to select the appropriate equipment for the investigation and that the required electrodes and consumables are present.			
Assist the Healthcare Scientist prepare the recording environment so it is suitable for recording a visual evoked potential.			
Assist the Healthcare Scientist to confirm the identity of the patient from the referral documentation.			
Assist the Healthcare Scientist to obtain and document a concise history from the patient.			

Assist the Healthcare Scientist in assisting the patients' visual acuity and that the required correction is used.			
Mark accurately the electrode sites, in accordance with a recommended placement system and the planned investigation.			
Correctly and securely site the electrodes, and correctly position the leads.			
Ensure that the contact impedances are appropriate for the electrode type.			
Ensure the patient is assisted to reach a position that is comfortable and optimises the quality of the recording.			
Assist in ensuring that the stimulators are correctly and accurately positioned, in accordance with recommended procedures and adjusted in accordance with the type of investigation.			

## Learning Outcome 11

**Demonstrate the ability to assist with the recording of a visual evoked potential.**

<b>Competency</b> The student will be able to:	<b>Reviewer</b>	<b>Date</b>	<b>Comments/ Evidence</b>
Assist with selecting the appropriate recording programs in accordance with standard protocol.			
Assist with selecting the appropriate machine settings (filters, stimulus parameters etc) for the investigation.			
Assist with selecting the appropriate modifying machine, as necessary, to optimise the display and highlight salient features.			
Ensure that the eye not being tested is masked/ patched adequately to ensure it receives no stimulus.			
Monitor the technical quality of raw data and identify any artefacts and eliminate or minimise with assistance.			
Assist with giving the patient clear instructions for the procedure monitoring and compliance / attention.			
Ensure sufficient samples are averaged to yield a waveform, which is stable and contains minimal noise with assistance.			



Check evoked potentials for reproducibility.			
Ensure the recording is legibly annotated to show control settings, stimulus settings, clinical states and events with assistance.			
Measure features of the evoked potential in accordance with standard protocol with assistance.			
Compare, with assistance, the salient features of the evoked potential waveforms with local normative data.			

## Learning Outcome 12

Demonstrate the ability to explain the biological and non-biological artefact in the EEG.

<b>Competency</b>	<b>Reviewer</b>	<b>Date</b>	<b>Comments/ Evidence</b>
The student will be able to:			
Collect a number of different types of biological and non-biological artefacts over a period of time.			
Collate the type of artefact, how they can be proved to be artefact or how they can be eliminated.			
If the artefact is biological – recognise how these can be monitored and what type of transducers or electrodes can be used.			
Recognise how and where these transducers or electrodes are applied.			
Present and document the assessment.			

### Learning Outcome 13

**Demonstrate the ability to recognise the type of EEG abnormality and the clinical significance from a range of the following disorders (one of these may be a non-epileptic seizure).**

- Generalised epilepsies
- Partial epilepsies
- Epilepsy syndromes e.g. West syndrome, typical absence, Juvenile myoclonic epilepsy, benign epilepsy of centro-temporal origin etc.
- Cerebral inflammatory process e.g. encephalitis, meningitis etc
- Degenerative disorders e.g. Alzheimer's, CJD etc
- Cerebrovascular disorders
- Metabolic disorders
- Others e.g. non epileptic seizures etc

<b>Competency</b>	<b>Reviewer</b>	<b>Date</b>	<b>Comments/ Evidence</b>
The student will be able to:			
Collect at least 10 interesting EEG case studies from the range above that have been either observed or recorded.			
Document patient history, medication, results of other procedures and provisional diagnosis.			
Document pathophysiology of each of the case studies provisional diagnosis.			
Write a factual report on the EEG for each case study.			
Correlate and documents patient history, Provisional diagnosis, factual report, conclusion and examples of the trace for each EEG.			
Formally present one or more case studies.			

## Section 4.6

**Division:** Physiological Sciences  
**Theme:** Neurosensory Sciences  
**Specialism:** Ophthalmic and Vision Science  
**Years 2 and 3:** Work-based [30 credits]

### Learning Outcome 2

Describe the investigations and procedures carried out in the diagnosis and treatment of disorders of the visual system including

- Physiological measurement systems in the evaluation of vision
- Reasons for referral
- Analysis of patient needs

<b>Competency</b>	<b>Reviewer</b>	<b>Date</b>	<b>Comments / Evidence</b>
The student will be able to:			
Describe common psychophysical tests undertaken in ophthalmic and vision science, including: <ul style="list-style-type: none"><li>• testing of visual acuity, visual field and colour vision</li><li>• the relevant anatomy and physiology of the aspect of the visual system that is being examined</li><li>• the psychophysical principles utilised in these test modalities.</li></ul>			
Describe common imaging and measurement tests and procedures used in ophthalmic and vision science, including: <ul style="list-style-type: none"><li>• tonometry</li><li>• fundus photography</li><li>• optical coherence tomography (OCT)</li><li>• ultrasonography.</li></ul>			
Describe the principles of physics used in: <ul style="list-style-type: none"><li>• tonometry</li><li>• fundus photography</li><li>• optical coherence tomography (OCT)</li><li>• ultrasonography.</li></ul>			

Describe the principles of infection control and demonstrate how they are implemented in clinical practice.			
Describe the role of the ophthalmic science practitioner in the context of the wider ophthalmic team.			
Describe the principles of patient centered care and how they are implemented in clinical practice.			
Describe the different forms of patient consent and the contexts in which they are applicable.			
Describe the principles of patient confidentiality and demonstrate how to maintain confidentiality in clinical practice.			
Describe different forms of communication (verbal, non-verbal, written, electronic etc.) and demonstrate effective communication with patients, relatives, carers and other members of the clinical team.			
Discuss different types of patient special needs e.g. sensory impairment, physical disability, learning disability, cognitive dysfunction etc and describe how to assess patient special needs and provisions that should be made in clinical practice.			

Describe the major issues of health and safety in a clinical environment and how to maintain a safe environment for staff and patients.			
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### Learning Outcome 3

**Demonstrate the ability to:**

- **Establish professional relationship with patient, identifying and addressing any special needs and maintaining patient confidentially**
- **Guide and assist patients with vision impairment**
- **Communicate effectively with patients, carers and staff members**
- **Obtain ophthalmic patient history**

<b>Competency</b>	<b>Reviewer</b>	<b>Date</b>	<b>Comments / Evidence</b>
The student will be able to:			
Confirm patient's identification and date of birth.			
Introduce self and explain to patient own role and responsibility in taking patient history.			
Obtain a history of patient's presenting ocular and/or visual symptoms.			
Obtain a history of patient's past ocular diseases, conditions and surgery to eye or ocular adnexae.			
Obtain and record a family history of diseases, in particular those affecting eye or vision.			
Record occupation of patient and any relevant details of patient's social circumstances and special needs.			
Obtain a history of any current and past problems relating to general health including any surgical procedures.			

Obtain details of birth history where appropriate.			
Obtain details of current medications (prescribed and self-purchased) for any ocular and other medical conditions.			
Record any known allergies or other adverse reactions.			
Accurately record all information gathered including relevant dates.			
Record signature and date verifying all information obtained.			
Notify the appropriate member of the multidisciplinary team in all instances of unexpected or clinically significant information.			
Record any further actions taken as a consequence of the information in the notes stating the date and the time.			

#### Learning Outcome 4

Demonstrate the ability to:

- Instill eye medication for the purpose of investigation or treatment
- Communicate effectively with patients, carers and staff members
- Document findings in patient records legibly and accurately
- Implement effective infection control measures

Competency	Reviewer	Date	Comments / Evidence
The student will be able to:			
Confirm the patient's identity.			
Confirm the prescription for the substance to be instilled including strength, timing and frequency.			
Confirm that the medication to be instilled has not exceeded the expiry date.			
Identify possible precautions which need to be taken or contra-indications to instillation of medication by obtaining relevant history from the patient and patient's records.			
Take action or seek advice from relevant personnel where precautions or contradictions have been identified.			
Explain to the patient the purpose, effects and duration of the medication.			
Instil the correct medication in the correct strength, with the correct method and at prescribed frequency to the correct eye.			
Record instillation in accordance with relevant protocol or procedure, including signature, time and date of administration.			
Limit risks of infection by using appropriate infection control procedures.			



### Learning Outcome 5

Demonstrate the ability to:

- Determine optical prescription of visual aids, determine refractive error of the eye with an autorefractor
- Measure visual acuity

Competency	Reviewer	Date	Comments / Evidence
The student will be able to:			
Ensure all equipment is maintained and calibrated.			
Confirm patient's identity.			
Confirm patient's existing use of optical correction.			
Set up and check calibration of focimeter, including adjusting for examiner's own refractive error where required.			
Identify the type of optical prescription in lenses by inspection			
Ensure glasses are correctly and securely placed on equipment.			
Measure optical prescription of spectacles, including distance, near and prismatic corrections of lenses with manual and automatic focimeters.			
Measure optical prescription of lenses by neutralisation.			
Determine optical centre of lenses.			

Transpose optical prescription as needed.			
Document optical prescription accurately, with correct notation in patient record, according to local protocols.			
Explain the test procedure with concise and clear instruction to the level of the patient's understanding.			
Measure refractive error for distance with an autorefractor.			
Transpose the optical prescription as needed.			
Perform additional measurements of refractive error consistent with personal role, responsibilities and level of competence.			
Ensure visual acuity chart is correctly illuminated for test purpose.			
Perform tests for visual acuity consistent with personal role, responsibilities and level of competence.			
Select appropriate visual acuity test according to any instruction in patient's notes, patient's age, co-operation, ability and any special needs.			
Position and align patient at the correct distance from the test chart.			
Change distance from test chart if appropriate.			

Instruct patient clearly, including wearing of current optical correction appropriate to the test distance.			
Ensure the occluder is correctly positioned over the non-tested eye and the position is monitored throughout the test.			
Assess the visual acuity with the pinhole if normal vision is not achieved or has reduced from the previous visit.			
Assess the vision to the smallest print / letter size possible for the test used.			
Accurately record results and any patient responses or difficulties at a place appropriate for the test.			
Use the appropriate form of notation for recording visual acuity.			
Explain and describe the significance of the test results to the patient with regard to their level of comprehension and ophthalmic history.			
Record any further actions taken as a consequence of the test results in the notes, stating the time and date, who they communicated with, any further instructions received or given to the patient and then sign.			

## Learning Outcome 6

Demonstrate the ability to:

- Perform comprehensive ophthalmic examination, including external examination of ocular adnexae, assessment of pupil size and reactions, examination of anterior segment with a slit lamp, fundus examination, and perform tonometry
- Communicate effectively with patients, carers and staff members

Competency	Reviewer	Date	Comments / Evidence
The student will be able to:			
Ensure all equipment is maintained and calibrated.			
Identify the component parts of the slit lamp and demonstrate slit lamp examination techniques.			
Confirm patient's identity.			
Confirm patient's understanding of the procedure and gain consent prior to commencing examination.			
Instill topical medications as required for purposes of examination.			
Note any abnormalities of head posture or facial appearance relevant to ocular examination.			
Position and align patient correctly for examination, avoiding patient discomfort.			
Examine ocular adnexae and anterior segment of eye with slit lamp to confirm normal appearance or for evidence of disease or disorder.			

Determine or otherwise full range of ocular movement and note any abnormalities of eye movement.			
Examine pupil responses and recognise abnormal responses including afferent pupil defect.			
Evaluate tear production and patency of naso-lacrimal passage.			
Identify components of Goldmann tonometer and demonstrate use of tonometer to accurately measure intraocular pressure.			
Describe sources of error when performing tonometry and demonstrate how to minimise them.			
Describe precautions and contra-indications to procedure and the relevant personnel to contact for further advice.			
Recognise significance of abnormal findings and measurements and take appropriate action.			
Record all findings accurately in case notes according to relevant protocols.			
Limit risks of infection by using appropriate infection control procedures.			

**Learning Outcome 7**  
**Demonstrate the ability to assess visual field.**

<b>Competency</b>	<b>Reviewer</b>	<b>Date</b>	<b>Comments / Evidence</b>
The student will be able to:			
Ensure that the area is clean and safe by preparing the area and equipment appropriately.			
Confirm patient's identity.			
Ensure patient has no current infection or reason for not being able to carry out procedure.			
Carry out visual acuity and set up appropriate optical correction.			
Enter correct data for patient age and optical correction.			
Give clear and precise instructions to the patient ensuring that he/she understands.			
Reassure and monitor the patient throughout the examination.			
Adjust testing strategies during the test according to patient cooperation and reliability indices.			
Analyse results and carry out additional testing if required.			
Document results in patient records.			
Accurately record patient responses and any difficulties with compliance.			
Return the patient records to the appropriate person.			
Inform the appropriate person if any further action needs to be taken differing to the local protocol.			

### Learning Outcome 8

**Demonstrate the ability to assess psychophysical measures of visual function including colour vision and contrast sensitivity.**

<b>Competency</b>	<b>Reviewer</b>	<b>Date</b>	<b>Comments / Evidence</b>
The student will be able to:			
Ensure that the area is clean and safe by preparing the area and equipment appropriately.			
Greet patient and ensure that this is the correct patient with correct details.			
Ensure patient has no present infection or reason for not being able to carry out procedure.			
Ensure that the patient is wearing the appropriate optical correction.			
Give clear and precise instructions to the patient.			
Monitor the patient and evaluate responses.			
Complete the required series of tests.			
Accurately document results in patient records.			
Return the patient records to the appropriate person.			
Inform the appropriate person if any further action needs to be taken differing to the local protocol.			

### Learning Outcome 9

**Demonstrate the ability to obtain structural measurements of the eye. This will include axial length measurements/biometry and pachymetry.**

<b>Competency</b> The student will be able to:	<b>Reviewer</b>	<b>Date</b>	<b>Comments / Evidence</b>
Ensure that the area is clean and safe by preparing the area and equipment appropriately.			
Greet the patient and ensure that this is the correct patient with the correct details.			
Ensure the patient has no current infection or reason for not being able to carry out procedure.			
Where topical medication is to be instilled, confirm the correct dosage and strength.			
Provide clear and precise instructions.			
Select the appropriate test parameters according to patient age, co-operation, ability and/or eye condition.			
Carry out the measurements in the correct sequence.			
Obtain sufficient number of accurate readings to provide reliable results.			
Document results and record any difficulties encountered.			



Evaluate results.			
Select appropriate formulae to calculate results where applicable.			
Seek further information and advice as appropriate according to local protocol.			

### Learning Outcome 10

**Demonstrate the ability to obtain images of the eye and supporting structures using light or lasers. This will include fundus photography and at least one modality of Optical Coherence Tomography (OCT), Scanning Laser Polarimetry (GDx) or Scanning Laser Tomography (HRT).**

<b>Competency</b>	<b>Reviewer</b>	<b>Date</b>	<b>Comments / Evidence</b>
The student will be able to:			
Ensure that the area is clean and safe by preparing the area and equipment appropriately.			
Greet the patient and ensure that this is the correct patient with the correct details.			
Ensure patient has no current infection or reason for not being able to carry out procedure.			
Explain possible side effects and consequences of procedure to the patient.			
Ensure sufficient topical medication is instilled to create the appropriate mydriasis.			
Determine patient's refractive error with autorefraction, keratometry and focimetry as required.			
Adjust the equipment appropriately to accommodate patient's refractive error.			
Select the appropriate image modality.			
Position and align patient correctly for each image capture, avoiding patient discomfort.			

Review and change image modality as necessary throughout the procedure.			
Ensure consistent and reproducible image measurements are obtained.			
Obtain clear and appropriate images to meet the clinical demand.			
Evaluate, interpret and annotate images as required to obtain appropriate result.			
Record and store images in accordance with relevant protocols and procedures.			
Annotate records as necessary.			

## Appendix 1

### Direct Observation of Practical/Procedural Skills Template: Neurosensory Sciences

<b>Student identification data</b>
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<b>Procedure:</b>			
<b>Clinical context:</b>	<b>Insert Module Title</b>	<b>Insert Module Title</b>	<b>Insert Module Title</b>

<b>Assessor's Name:</b>				
<b>Assessor's position:</b>			<b>Insert</b>	<b>Insert</b>

Difficulty of the procedure:	Low	Average	High
<b>Number of times procedure performed by student:</b>	1-4	5-9	>10

Please grade the following areas using the scale below	Below expectatio	Borderlin e	Meets expectatio	Above expectatio	Unable to comment. 1
1. Understands scientific principles of procedure including basic science underpinning it					
2. Has read, understands and follows the appropriate SOP's, risk and COSHH assessments, and any other relevant H&S documentation					
3. Understands and applies the appropriate internal and external quality control associated with the procedure					

4. Understands the risks associated with items of equipment and uses them appropriately					
5. Accurately completes associated documentation					
6. Output meets accepted laboratory/professional standards					
7. Carries out the procedure within appropriate time frame					
8. Is aware of the limitations of the test					
9. Demonstrates awareness of the limits of responsibility and when to seek advice					
10. Professionalism					

<sup>1</sup> Please mark this if you have not observed the behaviour

FEEDBACK AND DOCUMENTATION OF LEARNING NEEDS	AGREED ACTION

Outcome	Satisfactory Unsatisfactory	Date of assessment	Time taken for assessment:
Signature of Assessor	Signature of Student		Time taken for feedback:

## Appendix 2

### Case Based Discussion Template for Neurosensory Sciences

<b>Student identification data</b>			
<b>Brief description of output and focus of scenario discussed:</b>			
<b>Module:</b>	<b>Insert Title</b>	<b>Insert Title</b>	<b>Insert Title</b>
<b>Complexity of the scenario:</b>	<b>Low</b>	<b>Average</b>	<b>High</b>
<b>Assessor's Name:</b>			
<b>Assessor's position:</b>			

Please grade the following areas using the scale below	Below expectations	Borderline	Meets expectations	Above expectations	Unable to comment. <small>1</small>
1. Understands clinical and/or scientific principles relevant to scenario					
2. Can discuss relevant health and safety issues					
3. Can discuss the procedures used to obtain the results					
4. Can discuss the quality control procedures to ensure the result is accurate					
5. Demonstrates a knowledge of relevant 'Best Practice' guidelines and other policies relevant to the scenario					

<b>6. Can discuss the significance of routine patient results with reference to the reason for referral</b>					
<b>7. Is aware of, and can use as required, appropriate resources to aid in the interpretation of results</b>					
<b>8. Is aware of importance of audit trail and can complete audit trail accurately</b>					
<b>9. Demonstrates awareness of the limits of responsibility and when to seek advice</b>					
<b>10. Professionalism</b>					

<sup>1</sup>1. Please mark this if you have not observed the behaviour

<b>FEEDBACK AND DOCUMENTATION OF LEARNING NEEDS</b>	<b>AGREED ACTION</b>

<b>Outcome</b>	<b>Satisfactory</b> <b>Unsatisfactory</b>	<b>Date of assessment</b>		<b>Time taken for assessment:</b>	
<b>Signature of Assessor</b>		<b>Signature of Student</b>		<b>Time taken for feedback:</b>	