

## **Standard in development**

### **L6: Biomedical Scientist**

#### **Title of occupation**

Biomedical Scientist

#### **UOS reference number**

ST1315

#### **Core and options**

No

#### **Option title/s**

#### **Level of occupation**

Level 6

#### **Route**

Health and science

#### **Typical duration of apprenticeship**

36 months

#### **Degree apprenticeship**

#### **Target date for approval**

01/01/0001

#### **Resubmission**

No

#### **Would your proposed apprenticeship standard replace an existing framework?**

No

#### **Does professional recognition exist for the occupation?**

Yes

Health and Care Professions Council is the statutory registration body. The Institute of Biomedical Science is the professional membership body.

## Occupation summary

This occupation is found in the health and care sector. Biomedical scientists are mainly found working in hospitals, but they may also be found working in other healthcare settings including primary care and in public health. Biomedical scientists may also be employed in industry working in laboratory and research facilities and there may be opportunity for employment in higher education.

The broad purpose of the occupation is to carry out a range of laboratory and scientific tests to support the diagnosis and treatment of disease. Biomedical scientists investigate a range of medical conditions, including for example cancer, diabetes, blood disorders (eg anaemia), meningitis and hepatitis. Biomedical scientists perform a key role in screening for diseases, identifying those caused by bacteria and viruses and monitoring the effects of medication and other treatments. Biomedical scientists must be able to work with computers, sophisticated automated equipment, microscopes and other hi-tech laboratory equipment and to use a wide range of complex modern techniques in their day-to-day work. Biomedical scientists usually specialise in one of three specific areas: infection sciences, blood sciences or cellular sciences.

In their daily work, an employee in this occupation interacts with · Patients, service users and carers. · Other healthcare scientists and other members of the healthcare science team, for example laboratory assistants. · Healthcare professionals, for example allied health professionals, doctors, nurses and healthcare support workers. · Administration, management and other non-clinical staff, such as porters, cleaners and receptionists.

An employee in this occupation will be responsible for using a range of scientific tools, equipment and techniques to carry out a range of tests, investigations and procedures, playing a critical role in supporting the healthcare team in the diagnosis and treatment of human disease. Biomedical Scientists must work with a high degree of accuracy and must be able to follow standard operating procedures, protocols and policies consistently to ensure the quality of the techniques they use. Biomedical Scientists are responsible for the safe use and day to day maintenance of the laboratory tools and equipment they use. Biomedical Scientists are required to communicate effectively, in an easy-to-understand manner, with patients, carers and other healthcare professionals. Biomedical Scientists may provide professional leadership in their area of practice. They may supervise the work of others, for example laboratory assistants, and can delegate certain tasks to their wider team under supervision. 'Biomedical Scientist' is a protected title and individuals have to be registered with the Health and Professions Council to use it. They are responsible for maintaining their knowledge and skills and must maintain registration with the Health and Care Professions Council. They may contribute to the development of others. Biomedical Scientists are able to apply the principles of evidence-based practice to their decision making, using research other sources of evidence to improve the quality of their practice.

## Typical job titles

### Biomedical Scientist

## Are there any statutory/regulatory or other typical entry requirements?

Yes

### Entry requirements

Entry requirements are set locally and agreed by employers and training providers. Usually, people applying to this apprenticeship will typically have completed either A-levels, including at least one science A-level, or the Level 4 Healthcare Science Associate Apprenticeship.

### Occupation duties

#### DUTY

KSBS

**Duty 1** Practice according to the legal, ethical and professional standards and codes of conduct for Biomedical Scientists and in line with scope of own practice and limits of competence

**Duty 2** Take responsibility for and reflect on your own practice for the benefit of service users

**Duty 3** Develop and maintain own knowledge and skills via continuing professional development

**Duty 4** Provide, receive and respond to complex or sensitive information and communicate appropriately at all levels and across the multi-disciplinary team

**Duty 5** Use scientific and professional knowledge to analyse, interpret and report information and knowledge related to ideas and concepts

**Duty 6** Respond and adapt to changing situations using professional judgement to prioritise within scope of practice

**Duty 7** Plan, analyse, perform, assess and report investigations ensuring safe and quality practice

**Duty 8** Assess and monitor best practice in health and respond to arising issues in safety and security

**Duty 9** Plan, monitor and quality assure the application of technology for the measuring and monitoring of biomedical investigations

**Duty 10** Monitor the quality of services via audit, governance and incident investigation processes

**Duty 11** Assist biomedical service development activities and support research and service improvement

## Mapping

### Duty 1

#### **Practice according to the legal, ethical and professional standards and codes of conduct for Biomedical Scientists and in line with scope of own practice and limits of competence**

**K1:** The limits of own practice and when to seek advice or refer to another professional

**S1:** Practise safely and effectively within the limits of scope of practice, managing own workload and resources.

**K2:** The current legislation applicable to pathology laboratories and Biomedical Scientists, including the requirements set out by the Health and Care Professions Council.

**S2:** Practise within the legal and ethical boundaries for Biomedical Scientists and pathology laboratories

**K3:** The extent to which they are personally responsible for and must be able to justify their decision making

**S3:** Practise as an autonomous professional, assessing the situation and using knowledge and experience to initiate resolution of problems

### Duty 2

#### **Take responsibility for your own practice for the benefit of service users, the laboratory and the organisation**

**K4:** Own role in the diagnostic and therapeutic process and need to act in the best interests of service users.

**S4:** Exercise a professional duty of care

**K5:** The importance of obtaining and maintaining informed consent

**S5:** Obtain and maintain informed consent

**K6:** The impact of culture, equality and diversity on practice and the requirement to adapt practice to meet the needs of different group and individuals

**S6:** Practise in a non-discriminatory manner

**K7:** The suitability of sampling and procedures relevant to clinical needs and collection and preparation methods

**S7:** Select suitable specimens and procedures relevant to patients' clinical needs, including collection and preparation of specimens as and when appropriate

**K8:** The importance of engaging service users and carers in planning and evaluating diagnostics, treatments and interventions to meet their goals, including the impact of pathology services on the patient care pathway

**S8:** Work in partnership with service users, other professionals, support staff and others

### **Duty 3**

#### **Develop and maintain own knowledge and skills via reflection and continuing professional development**

**K9:** The importance of maintaining high standards of personal and professional conduct, of maintaining own health and keeping skills and knowledge up to date by participating in training, supervision and mentoring

**S9:** Maintain fitness to practise

**K10:** The value of reflection on practice, including the value of case conferences and other methods of review, and the need to record the outcome of such reflection

**S10:** Reflect on and review practice

**K11:** The value of continuing professional development, quality improvement and the need to adapt to new development or changing contexts within own role and laboratory techniques

**S11:** Change own practice as needed to take account of new developments or changing contexts

### **Duty 4**

#### **Provide, receive and respond to complex or sensitive information and communicate appropriately at all levels and across the multi-disciplinary team**

**K12:** The principles of information governance, including the safe use of health and social care information and the limits of the concept of confidentiality

**S12:** Maintain confidentiality, recognising and responding to situations where it is necessary to share information to safeguard service users or the wider public.

**K13:** The characteristics and consequences of verbal and non-verbal communication and how this can be affected by factors such as age, culture, ethnicity, gender, socio-economic status and spiritual or religious beliefs

**S13:** Communicate information, advice, instruction and professional opinion to service users, colleagues and others, selecting, varying and modifying the use of interpersonal, verbal and non-verbal skills

**K14:** The importance of assisting service users with their communication needs, for example through the use of an interpreter when providing information to enable informed decision making and promote active participation

**S14:** Communicate the outcomes of biomedical procedures or investigations

**K15:** The importance of building and sustaining professional relationships as an independent practitioner and as a member of a team

**S15:** Contribute effectively to work undertaken as part of a multi-disciplinary team

**K16:** The importance of managing records and all other information in accordance with applicable legislation, protocols and guidelines

**S16:** Keep accurate, comprehensive and comprehensible records in accordance with applicable legislation, protocols and guidelines

### **Duty 5**

**Use scientific and professional knowledge to analyse, interpret and report information and knowledge related to ideas and concepts**

**K17:** The importance of pre-determined quality standards, and their role in data validation

**S17:** Validate scientific and technical data and observations according to pre-determined quality standards

**K18:** The implications of non-analytical errors

**S18:** Work with accuracy and precision and in conformance with standard operating procedures and conditions

**K19:** The underpinning scientific principles of investigations provided by clinical laboratory services

**S19:** Undertake or arrange investigations as appropriate and analyse and critically evaluate the information collected

### **Duty 6**

**Respond and adapt to changing situations using professional judgement to prioritise within scope of practice**

**K20:** Understand the concept of leadership and its application to practice

**S20:** Exercise professional judgement and personal initiative, making and recording reasoned decisions to initiate, continue, modify or cease treatment, techniques or procedures.

**K21:** The structure and function of health and social care services in the UK, the role of other professions in health and social care and local systems and procedures for making and receiving referrals

**S21:** Make and receive appropriate referrals

**Duty 7 Plan, analyse, perform, assess and report investigations ensuring safe and quality practice**

**K22:** The structure and function of the human body, together with knowledge of health, disease, disorder and dysfunction relevant to cellular science, blood science, infection science, molecular and genetic science and reproductive science

**S22:** Investigate and monitor disease processes and normal states relating to cellular science, blood science, infection science, molecular and genetic science and reproductive science, where appropriate to the biomedical science discipline

**K23:** The role and responsibility of the laboratory with respect to the quality management of hospital, primary care and community-based laboratory services for near-patient testing and non-invasive techniques

**S23:** Use standard operating procedures for analyses including point of care 'in vitro' diagnostic devices

**K24:** The key concepts of diagnostic or monitoring procedures, methodologies, treatment and therapy used to support patient care in relation to clinical laboratory investigations

**S24:** Perform diagnostic or monitoring procedures, treatment, therapy or other actions safely, effectively and to reproducible standards

**K25:** Specialist equipment used within own laboratory environment

**S25:** Use and operate specialist and non-specialist equipment according to own discipline

**K26:** The importance of preparing reagents, solutions and buffers reproducibly

**S26:** Use liquid handling methodologies, including preparation of reagents, standard solutions and buffers

**K27:** The principles of experimental planning and time management

**S27:** Formulate management plans within your scope of practice

**K28:** The theoretical basis of, and the variety of approaches to, assessment and intervention

**S28:** Select and use assessment techniques and equipment to undertake and record a thorough, sensitive and detailed assessment, or outcomes relevant to patient's clinical needs, or when evaluating new procedures prior to routine use

**K45:** The importance of the rights, dignity, values, and autonomy of service users including their role in the diagnostic and therapeutic process and in maintaining health and wellbeing

**S45:** Recognise that relationships with service users should be based on mutual respect and trust, and be able to maintain high standards of care even in situations of personal incompatibility

## **Duty 8**

### **Assess and monitor best practice in health and respond to arising issues in safety and security**

**K29:** The techniques and associated instrumentation used in the practice of biomedical science

**S29:** Perform calibration and quality control checks, checking that equipment is functioning within its specifications and to respond appropriately to abnormalities

**K30:** The biological hazards groups and associated containment levels

**S30:** Process and analyse specimens including specimen identification, effective storage and safe retrieval of specimens

**K31:** The importance of maintaining the safety of both service users and those involved in their care

**S31:** Establish safe environments for practice, which minimise risks to service users, those treating them and others, including the use of hazard control and particularly infection control

**K32:** Health and safety legislation, and any relevant safety policies and procedures in force at the workplace, such as incident reporting

**S32:** Act in accordance with health and safety legislation, and any relevant safety policies and procedures in force at the workplace, such as incident reporting

**K33:** The principles of good laboratory practice

**S33:** Work safely, including being able to select and use personal protective equipment, hazard control and risk management, reduction or elimination techniques in a safe manner and in accordance with health and safety legislation

## **Duty 9**

### **Plan, monitor and quality assure the application of technology for the measuring and monitoring of biomedical investigations**

**K34:** The importance of adhering to protocols of specimen identification, including bar coding and electronic tag systems

**S34:** Recognise, communicate and understand the risks and possible serious consequences of errors and omissions in both requests for, and results of, laboratory investigations

**K35:** The importance of backup storage of electronic data

**S35:** Use systems for the accurate and correct identification of patients and laboratory specimens



**Duty 10****Monitor the quality of services via audit, governance and incident investigation processes**

**K36:** The importance of monitoring and evaluating the quality of practice and the value of research to the critical evaluation of practice

**S36:** Engage in evidence-based practice, evaluate practice systematically and participate in audit procedures/programmes, including maintaining an effective audit trail and assuring the quality of own practice

**K37:** The value of contributing to the generation of data for quality assurance and improvement programmes

**S37:** Participate in quality assurance programmes and gather information, including qualitative and quantitative data, that helps to monitor and evaluate the quality of practice and the responses of service users to their care

**K38:** The role of audit and review in quality management, including quality control, quality assurance and the use of appropriate outcome measures

**S38:** Evaluate intervention plans using recognised outcome measures and revise the plans as necessary in conjunction with the service user

**K39:** The importance of responding appropriately to abnormal outcomes from quality indicators

**S39:** Select and apply quality and process control measures, identifying and responding appropriately to abnormal outcomes from quality indicators

**K40:** The qualitative and quantitative tools and techniques to aid the diagnosis, screening and monitoring of health and disorders

**S40:** Evaluate analyses using qualitative and quantitative methods to aid the diagnosis, screening and monitoring of health and disorders

**Duty 11****Assist biomedical service development activities and support research and service improvement**

**K41:** The information and communication technologies and statistical packages available to present data

**S41:** Use information and communication technologies and statistical packages to present data in an appropriate format

**K42:** The principles and applications of scientific enquiry, including the evaluation of treatment efficacy and the research process

**S42:** Use research, reasoning and problem-solving skills to determine appropriate actions, evaluating research and other evidence to inform own practice

**K43:** The range of research methodologies used in biomedical science

**S43:** Design experiments, report, interpret and present data using scientific convention, including application of SI units and other units used in biomedical science

**K44:** The key concepts of supervising training and mentoring of work activities

**S44:** Supervise procedures in clinical laboratory investigations to reproducible standards

## Behaviours

**B1** Demonstrate a logical and systematic approach to problem solving

**B2** Treat people with dignity

**B3** Show respect and empathy for those you work with

**B4:** Be adaptable, reliable and consistent

**B5.** Uphold high quality and safe practice

## Qualifications

### English & Maths

Apprentices without level 2 English and maths will need to achieve this level prior to taking the End-Point Assessment. For those with an education, health and care plan or a legacy statement, the apprenticeship's English and maths minimum requirement is Entry Level 3. A British Sign Language (BSL) qualification is an alternative to the English qualification for those whose primary language is BSL.

### Does the apprenticeship need to include any mandated qualifications in addition to the above-mentioned English and maths qualifications?

Yes

### Other mandatory qualifications

A BSc degree that is accredited as meeting the Health and Care Professions Council Standards of Proficiency for Biomedical Scientists.

Level: 6 (integrated degree)

Additional information:

## Professional recognition

This occupation is regulated by the Health and Care Professions Council and Biomedical Scientist is a protected title. Upon successful completion of the apprenticeship, including the degree, the apprentice will be eligible to apply for registration with the HCPC as a Biomedical Scientist.

Biomedical Scientists can apply to be members of a professional body eg the Institute of Biomedical Science.

## **Involved employers**

## **Consultation**

## **Progression Routes**

ST0895 Enhanced clinical practitioner L6

ST0564 Advanced clinical practitioner (integrated degree) L7

## **Supporting uploads**

**Mandatory qualification uploads**

**Professional body confirmation uploads**

## **Involved employers**

(section to be completed later)