Overview of the role

Handling legal matters and transactions in relation to patents within regulatory, legal, professional and ethical frameworks.

L6: Patent scientist or patent engineer
Version 2.0

Title of occupation

Patent scientist or patent engineer

UOS reference number

ST1454

Core and options

Yes

Option titles

- Digital patent scientist
- Engineering and Manufacturing patent engineer
- Chemistry and Life Sciences patent scientist

Level of occupation

Level 6

Occupational maps data

Route: Legal, finance and accounting
Pathway: Legal
Cluster: Legal professional or lawyer

Typical duration of apprenticeship

48 months

Degree apprenticeship

degree-apprenticeship

Target date for approval

30/11/2026

Resubmission

No

Would your proposed apprenticeship standard replace and existing framework?

No

Does professional recognition exist for the occupation?

Yes

Regulated occupation

Is this a statutory regulated occupation?

No

Occupational summary

This occupation is found in organisations of all sizes and across a range of sectors. Patent scientists and patent engineers may be employed in-house by organisations operating in sectors such as engineering, pharmaceuticals, energy, and technology. They may also work for firms of patent and trademark attorneys, serving clients ranging from individual inventors to multinational corporations.
The broad purpose of the occupation is to support the protection, management, and defence of intellectual property (IP). Through patents, intellectual property law protects ownership rights relating to inventions such as new medicines, products, technologies, and industrial processes. Patent scientists and patent engineers combine legal training with degree-level scientific, engineering, or technical expertise, enabling them to understand complex and highly specialised innovations. They may work in fields such as biotechnology, medical technology, green technologies, engineering, pharmaceuticals, or digital technology.
Working under the supervision of regulated patent attorneys, patent scientists and patent engineers support stakeholders throughout the patent lifecycle, from the early development of an invention through to patent protection, commercialisation, and enforcement. They may advise on IP strategy across different markets and territories, including matters relating to investment, product development, licensing, and commercial growth. They also support activities such as the preparation of patent applications, patentability assessments, freedom-to-operate analysis, patent landscaping, enforcement, and the sale or transfer of patent rights.
Patent scientists and patent engineers are not themselves regulated but operate within a regulated legal and professional environment. They support patent attorneys who are regulated by the Intellectual Property Regulation Board (IPReg) and work in accordance with relevant ethical, legal, and financial requirements, including the IPReg Core Regulatory Framework. They apply their specialist scientific, engineering, or technical knowledge alongside an understanding of UK, European, and international patent law. They must

understand the technical context and content of the product, process, or technology for which a stakeholder is seeking patent protection, and how UK, European, and international patent law can be applied most effectively to protect it and achieve the best outcomes for clients and stakeholders.

Typical job titles

Artificial intelligence patent scientist or engineer
Bio-tech patent scientist or engineer
Chemistry patent scientist or engineer

Climate change technology scientist or engineer
Digital patent scientist or engineer
Electronics patent scientist or engineer
Engineering patent scientist or engineer
Hi-tech patent scientist or engineer
In-house patent scientist or engineer
Life sciences patent scientist or engineer
Mechanical engineering patent scientist or engineer
Patent engineer
Patent scientist
Physics patent scientist or engineer
Software patent scientist or engineer

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

Yes

Entry requirement label

Typical entry requirements are at least 120 UCAS points achieved via:

- three A levels, including a minimum of two A levels in STEM subjects such as mathematics, computer science, design and technology, physics, chemistry or biology;
- International Baccalaureate with a minimum of two STEM subjects at higher level, such as mathematics, computer science, design and technology, physics, chemistry or biology;
- T Level in a relevant STEM subject, such as digital data analytics, digital software development, digital support and security, engineering, manufacturing, processing and control, or science;
- other equivalent qualifications.

Core occupation duties

DUTY	KSBS
Duty 1 Assess scientific, digital, or engineering innovations for opportunities for patent protection and other forms of intellectual property protection.	K1 K2 K3 K4 K5 K6 K7 K8 K9 K10 K14 K15 K16 K17 S1 S2 S3 S8 S9 S10 S11 S12 B1 B2 B3 B4 B5 B6 B7
Duty 2 Apply scientific, engineering, or digital knowledge and acumen to carry out technical and legal drafting activities under supervision, such as drafting patent applications.	K1 K2 K3 K4 K5 K6 K9 K14 K15 K16 K17 S1 S2 S3 S4 S5 S6 S8 S9 S10 S11 S12 B1 B2 B3 B4 B5 B6 B7
Duty 3 Prepare and submit application documents to relevant intellectual property offices. Respond, under supervision, to communications from relevant intellectual property offices and amend applications to secure the grant of intellectual property rights, applying scientific, engineering, or digital knowledge and acumen as required.	K1 K2 K3 K4 K5 K6 K7 K8 K9 K14 K15 K16 K17 S4 S5 S8 S9 S10 S11 S12 B1 B2 B3 B4 B5 B6 B7
Duty 4 Manage caseloads in line with organisational approaches, managing multiple deadlines and taking account of international timescales where relevant.	K3 K4 K5 K6 K8 K17 S1 S2 S3 S4 S5 S6 S10 S11 S12 B1 B2 B3 B4 B5 B6 B7

DUTY	KSBS
Duty 5 Maintain accurate files and records in accordance with organisational procedures and external requirements.	K3 K4 K5 K6 K7 K8 K17 S1 S2 S3 S4 S5 S6 S10 S11 S12 B1 B2 B3 B4 B5 B6 B7
Duty 6 Support senior colleagues in providing advice on third-party intellectual property rights, such as licensing activities, oppositions, validity opinions, or infringement matters in relation to scientific, engineering, or digital innovations as required.	K1 K2 K3 K4 K5 K6 K7 K8 K9 K11 K12 K14 K15 K16 K17 S6 S8 S9 S10 S11 S12 B1 B2 B3 B4 B5 B6 B7
Duty 7 Read and summarise technical documents, such as technical specifications, research articles, and patent documents.	K1 K2 K5 K6 K7 K14 K15 K16 S1 S4 S5 S6 S8 S9 S12 B1 B2 B3 B4 B5 B6 B7
Duty 8 Conduct legal research using a range of approaches and sources, such as reading and summarising case law, and applying the findings to patent and related matters.	K1 K2 K5 K6 K8 K9 K10 K11 K14 K15 K16 K17 S1 S4 S5 S6 S7 S10 S11 S12 B1 B2 B3 B4 B5 B6 B7
Duty 9 Assist with the evaluation of the risks, costs, and benefits of courses of action, such as general filing strategies and procedures, and, under supervision, provide clear legal advice to stakeholders	K1 K2 K3 K4 K5 K6 K7 K8 K9 K10 K12 K14 K15 K16 K17 K19 S1 S4 S5 S6 S7 S8 S9 S11 S12 B1 B2 B3 B4 B5 B6 B7

DUTY	KSBS
while taking account of the commercial context.	
Duty 10 Take accurate instructions from stakeholders ensuring the technical details and context of the legal matter are fully understood.	K1 K2 K6 K8 K9 K14 K15 K16 S1 S2 S3 S4 S5 S6 S8 S9 S10 S11 S12 B1 B2 B3 B4 B5 B6 B7
Duty 11 Communicate on intellectual property matters with key stakeholders, ensuring mutual understanding.	K1 K2 K3 K4 K5 K6 K7 K8 K9 K10 K11 K12 K13 K14 K15 K16 K17 K18 S1 S2 S3 S4 S5 S6 S7 S8 S9 S10 S11 S12 B1 B2 B3 B4 B5 B6 B7
Duty 12 Assist with the management of stakeholder relationships.	K12 K13 K18 S1 S2 S3 S4 S5 S6 S8 S9 S12 B1 B2 B3 B4 B5 B6 B7
Duty 13 Maintain up-to-date knowledge of their area of technical specialism.	K14 K15 K16 K17 K19 S1 S2 S3 S6 S8 S9 S10 B1 B2 B3 B4 B5 B6 B7
Duty 14 Maintain professional standards by developing professional knowledge and expertise and identifying and working within their own limitations of competence, operating at all times in line with the ethical, legal, and financial responsibilities set out in the IPReg Core Regulatory Framework.	K1 K2 K3 K4 K5 K6 K7 K8 K9 K10 K11 K12 K13 K14 K15 K16 K17 K18 S1 S2 S3 S4 S5 S6 S7 S8 S9 S10 S11 S12 B1 B2 B3 B4 B5 B6 B7

Option occupation duties

Digital patent scientist duties

DUTY	KSBS
Duty 15 Apply specialised knowledge of digital technologies and knowledge of case law relevant to digital inventions to assess risks and opportunities for clients and or stakeholders in intellectual property work.	K20 K21 K22 K23 K24 K25 K26 K27 S13 S14 S15 B1 B2 B3 B4 B5 B6 B7
Duty 16 Apply specialised knowledge of digital technology to ensure detailed, accurate, thorough, and robust drafting of intellectual property documents.	K20 K21 K22 K23 K24 K25 K26 K27 S13 S14 S15 B1 B2 B3 B4 B5 B6 B7

Engineering and manufacturing patent engineer duties

DUTY	KSBS
Duty 17 Apply specialised knowledge of engineering and knowledge of case law relevant to engineering inventions to assess risks and opportunities for clients and or stakeholders in intellectual property work.	K28 K29 K30 K31 K32 K33 K34 S16 S17 S18 B1 B2 B3 B4 B5 B6 B7
Duty 18 Apply specialised knowledge of engineering to ensure detailed, accurate, thorough, and robust drafting of intellectual property documents.	K28 K29 K30 K31 K32 K33 K34 S16 S17 S18 B1 B2 B3 B4 B5 B6 B7

Chemistry and Life Sciences patent scientist duties

DUTY	KSBS
Duty 19 Apply specialised knowledge of chemistry and life sciences and knowledge of case law relevant to chemistry and life sciences inventions to assess risks and opportunities for clients and or stakeholders in intellectual property work.	K35 K36 K37 K38 K39 K40 K41 K42 K43 K44 S19 S20 B1 B2 B3 B4 B5 B6 B7
Duty 20 Apply specialised knowledge of chemistry and life sciences to ensure detailed, accurate, thorough, and robust drafting of intellectual property documents.	K35 K36 K37 K38 K39 K40 K41 K42 K43 K44 S19 S20 B1 B2 B3 B4 B5 B6 B7

KSBs

Knowledge

K1: Principles of patentability within UK and European Patent Office systems, including novelty, inventive step, added matter, enablement, excluded subject matter, clarity, and sufficiency.
K2: Basic principles of patentability requirements in other major jurisdictions, including the United States of America.
K3: Principles of the patent lifecycle, including priority, Patent Cooperation Treaty filing, national and regional phases, prosecution, grant, validation, request for unitary effect, and renewal processes.
K4: Operational systems and procedures of the UK Intellectual Property Office, European Patent Office and Patent Cooperation Treaty, including deadlines, fees, and consequences of non-action, as appropriate to the role.
K5: Principles of UK Intellectual Property Office revocation, European Patent Office opposition and European Patent Office appeal procedures, as relevant to the role.
K6: Principles of patent infringement.
K7: The use of UK Intellectual Property Office and European Patent Office patent registers to search for patent and family data.
K8: Principles of trademark, registered design, unregistered design right, and copyright protection, as appropriate to the role.
K9: Key aspects of decisions from leading cases in the Supreme Court of the United Kingdom, the European Patent Office, and the Unified Patent Court affecting UK patent law.
K10: Principles of UK law relating to the protection of confidential information, as relevant to the role.
K11: Principles of English law, including an overview of the legislative process, court system, and operation of precedent, as relevant to the role.
K12: Ethical requirements for patent attorneys and the IPReg Core Regulatory Framework, as relevant to the role, including client confidentiality, management of conflicts of interest, and legal professional privilege as it applies to patent attorneys.
K13: Approaches to file management and record keeping, as relevant to the role.
K14: Mathematical principles and their application in science, engineering, and or computer science, as relevant to the role, such as in data analysis.
K15: Principles of experimental design and empirical testing as applied to science, engineering, and or computer science.
K16: Principles of communicating scientific, digital, and or engineering information.
K17: Principles of working safely and securely online with digital technologies, including principles of cybersecurity, and the ethical use of artificial intelligence (AI).
K18: Principles of equality, diversity, and inclusion (EDI), and their impact on the delivery of legal services.
K19: The impact of emerging technologies on climate change and sustainability, and the potential legal opportunities and challenges.
K20: Principles of computer science and programming, such as how computers work, the basic building blocks of computer systems, logic circuits, hardware design of processors, memory, and other computer components, and how computers are used in business and industry.
K21: Principles of computer platforms, such as the differences and advantages of different computer platforms, and the main areas of vulnerability in common computing systems.
K22: Principles of computer programming, including programming languages, computer algorithms, libraries, the use of logic and logical analysis to create code, defensive

programming and cyber security, different coding and scripting languages, and different scripting environments, such as AI-generated code.
K23: Principles of computing solution design, including the fundamentals of systems and software design, the software development life cycle, data integration processes, and software testing methods.
K24: Principles of computer networks, including fundamentals of network operation, common network types; the roles of different layers in a network and or computer system; protocols and common vulnerabilities; the operation of cloud or distributed computing and its advantages and disadvantages.
K25: Concepts, theory, and practice of information and data security and cryptography, including different types of cryptography and their advantages and disadvantages.
K26: Data science principles, including data collection, storage, and analysis; the design, development, and management of database systems; fundamental database theory; addressing vulnerability to cyber-attacks; and approaches to big data and open data.
K27: Principles of AI, including the concepts, theories, and terminology of AI and machine learning, such as evolutionary algorithms, different training methods, and different types of neural networks.
K28: Principles of engineering design, selecting and reviewing technical literature and information, computer-aided design (CAD), manufacturing components in a workshop, and testing.
K29: Thermodynamics, including the first, second, and third laws of thermodynamics, combustion and heat engine cycles, and heat exchangers.
K30: Fluid mechanics, including the properties of liquids and gases, and fluid flow and dynamics.
K31: Electrical engineering, including electrical circuits and electrical devices.
K32: Mechatronics, including signal analysis, closed-loop feedback, control systems, and simulations.
K33: Principles of solid mechanics, including forces, moments, static equilibrium, kinematics, and vibration.
K34: Materials engineering, including stress and strain.
K35: Principles of atoms and molecules, their structure and how they can be represented, such as the identification of organic functional groups, isomerism and stereochemistry, organic reaction intermediates, and IR and 13C-NMR spectroscopy
K36: Principles of inorganic chemistry, including bonding, periodicity, and molecular structure in main-group and d-block element chemistry, f-block chemistry, transition metal complexes, molecular symmetry and crystallography, and solid-state chemistry.
K37: Principles of physical chemistry, including chemical equilibrium, the behaviour of acids and bases, and electrochemistry.
K38: Principles of thermochemistry and reaction kinetics.
K39: Principles of analytical chemistry and instrument analysis, such as titration, gravimetry, atomic spectroscopy, spectrophotometry, and chromatographic and electrochemical techniques.
K40: Principles of organic chemistry, including bonding, organic reactions and mechanisms, the chemistry of the carbonyl group, and polymer chemistry.
K41: Principles of the study of biological molecules, cell biology, and microbiology, including the structure and function of biomolecules and cells, and immunology.
K42: Principles of genetics, evolution, and mechanisms of evolutionary change.
K43: Principles of applied molecular biology, including nucleic acid molecular methodologies and their application, and the utilisation and genetic modification of organisms for biotechnology applications.

K44: Principles of biochemistry, including protein structure and function, and metabolic processes linked to cellular signalling and protein modification.

Skills

S1: Prepare first drafts of UK patent specifications under the supervision of a qualified patent attorney.
S2: Adopt appropriate patent claim structures, for example, appropriate claim order and claim dependencies.
S3: Draft robust patent claims, setting out fallback positions as appropriate to specific circumstances.
S4: Draft multi-issue responses to UK Intellectual Property Office or European Patent Office official letters, including claim amendments, under the supervision of a qualified patent attorney.
S5: Prepare draft responses to official letters from intellectual property offices in major overseas jurisdictions, including the United States of America, under the supervision of a qualified patent attorney.
S6: Draft preliminary freedom-to-operate (FTO) analyses or validity analyses under the supervision of a qualified patent attorney.
S7: Prepare summaries of recent IP law developments or case law, and present them orally and or in writing to stakeholders.
S8: Review and critically assess peer-reviewed scientific, digital, and or engineering publications, and keep up to date with new or emerging scientific, digital, or engineering ideas and concepts to inform understanding and practice relevant to the role.
S9: Communicate technical concepts orally and in writing, ensuring that the approach is tailored to the needs of stakeholders.
S10: Progress casework expeditiously, planning ahead and maintaining case files and records in accordance with procedures.
S11: Evaluate the risks, costs, and benefits of alternative courses of action for the client, stakeholder, or employer.
S12: Work safely and securely with digital technologies to ensure compliance with data protection and cybersecurity requirements.
S13: Apply logic and logical analysis to create programmes or programme modules, using industry-standard software to design, debug, and test computer programs, including the development and training of AI systems using machine learning principles.
S14: Document and set out digital programmes and modules at a general and more detailed level in documentation to ensure that they are protected in law.
S15: Build, test, and evaluate software solutions or web-based applications using industry-standard development processes.
S16: Apply engineering principles to solve manufacturing engineering problems.
S17: Manage engineering design projects, including project management, risk management, and technical report writing.
S18: Apply computational and analytical techniques on engineering data to arrive at optimum design solutions.
S19: Use practical, analytical, and or cheminformatics skills to interpret data in chemistry, and or computational chemistry or molecular modelling.
S20: Collect and analyse field biology data, and apply statistical methods to analyse, interpret, and present findings.

Behaviours

B1: Adheres to the ethical, legal, and financial responsibilities set out in the IPReg Core Regulatory Framework as they relate to a regulated person.
B2: Upholds the constitutional principle of the rule of law and the proper administration of justice in alignment with the ethical, legal, and financial responsibilities set out in the IPReg Core Regulatory Framework.
B3: Upholds public confidence in the intellectual property profession in alignment with the ethical, legal, and financial responsibilities set out in the IPReg Core Regulatory Framework.
B4: Encourages equality, diversity, and inclusion in and by the intellectual property profession in alignment with the IPReg Core Regulatory Framework.
B5: Identifies and acts in the best interests of each client and or stakeholder in alignment with the ethical, legal, and financial responsibilities set out in the IPReg Core Regulatory Framework.
B6: Keeps up to date with legal and technical developments relevant to their practice to maintain and develop capabilities and or support continuing professional development (CPD), in alignment with the ethical, legal, and financial responsibilities set out in the IPReg Core Regulatory Framework.
B7: Acts within the scope of their own professional and technical competence and under appropriate supervision, in alignment with the ethical, legal, and financial responsibilities set out in the IPReg Core Regulatory Framework.

Qualifications

English and maths

English and maths qualifications must be completed in line with the apprenticeship funding rules.

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

Yes

Other mandatory qualifications

Patent Scientist or Patent Engineer BSc (Hons) or BEng (Hons)

Level: 6 (integrated degree)

Additional information: The degree must include an IPReg-accredited foundation level qualification. Please refer to the Higher Education Provider to confirm if English and maths is a regulatory requirement or is an essential component of any mandatory qualification.

Professional recognition

This standard aligns with the following professional recognition:

- Chartered Institute of Patent Attorneys (CIPA) for Student

Consultation

The group has consulted CIPA Council and the IP Federation throughout the development process.
CIPA Council was provided with a copy of the draft standard at its two most recent Council meetings (1 July 5 August 2 September and 7 October 2026), during which constructive and open discussions took place. All comments, questions and points raised by Council members during those discussions were carefully considered and incorporated where appropriate. CIPA is the professional and examining body for patent attorneys in the United Kingdom. Founded by Royal Charter, it acts as a professional and representative body for intellectual property practitioners in patents, designs, trademarks and other forms of intellectual property. It promotes the education, standing, training and continuing professional development of intellectual property practitioners, and establishes, maintains and enforces high standards of professional conduct and compliance with the law.
The IP Federation, as a cross-sectoral industry organisation covering all technologies, aims to improve the IP framework to meet the needs of innovative industry by representing, nationally and internationally, the views of UK-based businesses. Its current membership of 41 influential IP-intensive companies has wide experience of how IP works in practice to support the growth of technology-driven industry and generate economic benefit.
The Chair has received written recognition and thanks from the Minister for AI, Rt Hon Kanishka Narayan MP, in developing this apprenticeship, following his earlier expression of strong support for intellectual property apprenticeships.

Progression routes

On completion, individuals in this occupation may progress to become a Patent Attorney through further training and successful completion of the Final Diploma examinations of the Patent Examination Board (PEB) of the Chartered Institute of Patent Attorneys (CIPA).

Supporting uploads

Mandatory qualification uploads
Mandated degree evidence uploads
ST1454_standard_mandated-degree-evidence_L6 Patent Engineer Scientist.msg
Professional body confirmation uploads
ST1454_standard_professional-body-confirming-alignment_2026 10 08 Skills England Student Admission Letter CIPA.pdf

Involved employers

BAE Systems PLC, Canon Europe Ltd, HGF, Johnson Matthey PLC, Marks and Clerk LLP, Murgitroyd & Company, Rolls-Royce.

Other involved stakeholders

Intellectual Property Regulation Board (IPReg), Chartered Institute of Patent Attorneys (CIPA), University of Cumbria, UK Intellectual Property Office (IPO), IP Federation.

Subject sector area

15.5 Law and legal services