# Practical Endorsement - A Level Geology

| Specified practical work | Specification Reference | Competency opportunity | | | | | Practical technique | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | A. Location of geological features | B. Field sketches | C. Dip and strike measurements | D. Construct graphic logs | E. Use sampling techniques | F. Apply classification systems | G. Annotated scientific drawings | H. Full rock description | I. Use of photomicrographs | J. Use of appropriate apparatus | K. Use of physical and chemical testing | L. Methods to increase accuracy | M. Use ICT |
| SP1 Investigation of diagnostic properties of minerals: colour, crystal shape, cleavage, fracture, hardness, relative density, streak, lustre, reaction with cold dilute (0.5 mol dm-3) hydrochloric acid in order to identify minerals | F 1.1 e | ✓ | | | ✓ | ✓ | | | | | | | | | | | ✓ | | |
| SP2 Measurement of the density of minerals | F 1.1 e | ✓ | | | ✓ | ✓ | | | | | | | | | | ✓ | ✓ | | |
| SP3 Application of classification systems using distinguishing characteristics to identify unknown minerals | F 1.1 e | ✓ | | | ✓ | | | | | | | ✓ | | | | | ✓ | | |
| SP4 Production of scaled annotated scientific drawings of rock samples from hand samples using a light microscope, or hand lens observation | F 1.1 g | ✓ | | | ✓ | ✓ | | | | | | | ✓ | | | ✓ | | ✓ | |
| SP5a Production of full rock description of macro and micro features from **hand specimens** and unfamiliar field exposures of sedimentary rocks in order to interpret component composition, colour and textures, to identify rock types and to deduce their environment of deposition | F 2.1 e | | ✓ | | ✓ | ✓ | | | | | | | | ✓ | | ✓ | | | |
| SP5b Production of full rock description of macro and micro features from hand specimens and **unfamiliar field exposures** of sedimentary rocks in order to interpret component composition, colour and textures, to identify rock types and to deduce their environment of deposition | F 2.1 e | | ✓ | ✓ | ✓ | ✓ | | | | | | | | ✓ | | ✓ | | | |

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| SP6 Construction of graphic logs using appropriate scale and symbol sets for unfamiliar geological sequences and exposures to record data relevant to an investigation | F 2.1 e | ✓ | | ✓ | ✓ | ✓ | | | | ✓ | ✓ | | | | | ✓ | | | |
| SP7 Use of photomicrographs to identify minerals and rock textures of sedimentary rocks in order to identify rock types and to deduce their environment of deposition | F 2.1 e | | ✓ | | ✓ | ✓ | | | | | | | | | ✓ | ✓ | | | |
| SP8 Production of full rock description of macro and micro features from hand specimens and/or unfamiliar field exposures of igneous rocks in order to interpret component composition, colour and textures, to identify rock type and to deduce their cooling history | F2.2.b | | ✓ | ✓ | ✓ | ✓ | | | | | | | | ✓ | | ✓ | | | |
| SP9 Use of photomicrographs to identify minerals and rock textures of igneous rocks to identify rock type and to deduce their cooling history | F 2.2 b | | ✓ | | ✓ | ✓ | | | | | | | | | ✓ | ✓ | | | |
| SP10 Production of full rock description of macro and micro features from hand specimens and/or unfamiliar field exposures of metamorphic rocks in order to interpret component composition, colour and textures, to identify rock type and to deduce the temperature and pressure conditions of their formation | F 2.2 g | | ✓ | ✓ | ✓ | ✓ | | | | | | | | ✓ | | ✓ | | | |
| SP11 Use of photomicrographs to identify minerals and rock textures of metamorphic rocks to identify rock type and to deduce the temperature and pressure conditions of their formation | F 2.2 g | | ✓ | | ✓ | ✓ | | | | | | | | | ✓ | ✓ | | | |
| SP12 Location of geological features onto a base map | F 2.3 b | ✓ | | | ✓ | | ✓ | | | | | | | | | ✓ | | | |
| SP13 Identification of the location of geological features in the field using six figure grid references on maps | F 2.3 b | ✓ | | | ✓ | | ✓ | | | | | | | | | ✓ | | | |

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| SP14 Production of scaled, annotated field sketches at unfamiliar field exposures to record data relevant to an investigation | F 2.3 b | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | | | ✓ | | ✓ | |
| SP15 Measurement of dip and strike elements: dip angle, dip and strike directions of planar surfaces, relevant to an investigation | F 2.3 b | | ✓ | ✓ | ✓ | ✓ | | | ✓ | | | | | | | ✓ | | | |
| SP16 Application of classification systems using distinguishing characteristics to identify unknown fossils | F 3.1 d | | ✓ | | ✓ | | | | | | | ✓ | | | | | | | |
| SP17 Production of scaled, annotated scientific drawings of fossils, using a light microscope, or hand lens observation | F 3.1 d | ✓ | | | ✓ | ✓ | | | | | | | ✓ | | | ✓ | | ✓ | |
| SP18 Measurement of densities of representative samples of Earth layers (e.g. granite, basalt) | F 4.1 a | | ✓ | | ✓ | ✓ | | | | | | | | | | ✓ | | | |
| SP19 Investigation of the relationships between earthquake data (focal depth, magnitude and distance from plate boundaries) using data on Google Earth™ | F 4.2 b | | ✓ | | ✓ | ✓ | | | | | | | | | | ✓ | | | ✓ |
| SP20 Investigation of contact metamorphism using the Metamorphic Aureole simulation experiment | G 1.2 b | ✓ | | ✓ | ✓ | ✓ | | | | | | | | | | ✓ | | ✓ | ✓ |

**Practical endorsement geology - complete statements**

A Location of geological features in the field using traditional navigation and basic field survey skills without the use of GPS interpolate between scale markings

B Identification of geological structures in the field recording observations as field sketches

C Use of a compass clinometer to measure two and three-dimensional geological data across a range of scales such as the dip and strike of planar surfaces, or the apparent dip of fold limbs exposed on a hillside or cliff section

D Construct graphic logs using appropriate scale and symbol sets for unfamiliar geological sequences and exposures

E Use sampling techniques in fieldwork

F Apply classification systems using distinguishing characteristics to identify unknown minerals and fossils

G Produce annotated scientific drawing of fossils, or small scale features, from hand samples using a light microscope, or hand lens observation

H Produce full rock description of macro and micro features from conserved hand samples and unfamiliar field exposures

I Use of photomicrographs to identify minerals and rock textures

J Use appropriate apparatus to record a range of quantitative measurements (to include mass, time, volume, temperature and length)

K Use of physical and chemical testing to identify minerals to include density test & Mohs hardness test

L Use methods to increase accuracy of measurements, such as timing over multiple observations, or use of a fiducial (scale in photograph/field sketch)

M Use of ICT to:

- compile and analyse geological data sets through to visualization using geographic information system (GIS)
- collect, process and model geological data