

## Fieldwork and practical work guidance

Students are required to complete a practical programme of work of 20 hours of lesson time in addition to the 10 hours for the internal assessment task.

Teachers must design a practical programme, which may include:

- short labs or projects extending over several weeks
- computer simulations
- using databases for secondary data
- developing and using models
- data-gathering exercises such as questionnaires and surveys
- data-analysis exercises
- fieldwork.

The range of tasks should reflect the interdisciplinary nature of the course and the content of the eight topics it covers.

### Some suitable methodologies for students

- Values and attitude surveys or questionnaires – for example, to assess EVSs
- Issue-based inquiries to inform decision-making – for example, an examination of the criteria used to locate wind farms, solar farms or fish farms
- Observational fieldwork (natural experiments), such as examining zonation patterns on a seashore, layering in a forest or assessing percentage cover in a field using transects, measuring biotic and abiotic components of an ecosystem, and calculating populations using the Lincoln index
- Field manipulation experiments – for example, the effect of fertilisers on the growth of plants, or the effect of clearing an area with observations of the plants that recolonise it
- Ecosystem modelling, such as setting up an aquarium or a bottle garden to demonstrate mesocosms
- Laboratory work, such as measurements of energy content (biomass) of plant material, rates of photosynthesis or respiration, and identification of organisms using or constructing a key
- Models of sustainability, such as comparison of sustainable systems from different countries
- Systems diagrams or other valid holistic modelling approaches, such as using Sankey diagrams and constructing pyramids of biomass and energy from data
- Elements of environmental impact assessments – for example, assessing the effect of agriculture on a stream or waterway
- Secondary demographic, development and environmental data, such as opinions of different age groups in relation to acceptance of solar or wind power
- Collection of both qualitative and quantitative data

### Analytical techniques to help prepare students for the internal assessment

- Estimations of net primary productivity (NPP)/gross primary productivity (GPP) or net secondary productivity (NSP)/gross secondary productivity (GSP)
- Application of descriptive statistics (measures of spread and average), mean and standard deviation of data collected
- Application of inferential statistics (testing of null hypotheses), Simpson's reciprocal index
- Cartographic analysis or use of satellite photographs from NASA to analyse changes in forests or ice cover



- Use of spreadsheets or databases (e.g. to analyse trends in human population)
- Detailed calculations of footprints (including ecological, carbon and water footprints) for individuals or countries using reference data