

## ENVIRONMENTAL AND LAND-BASED STUDIES

### Unit 9: Research methodology, evaluation and environmental analysis



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### Level 3 Unit 9: Research methodology, evaluation and environmental analysis

#### Sample scheme of work

This is an example of a scheme of work. You can adjust it or extract content to create a scheme of work to suit your delivery needs. It can also be adjusted by adding theory workshops to support learners who have/need additional learning time.

This unit is assessed through a centre set and marked assignment.

<b>Total GLH</b>	60
<b>Delivery model</b>	Based on teaching three-hour sessions.
<b>Aim</b>	Learners will develop the skills and techniques required by ecological scientists to study the environment.  They will be able to plan, carry out, analyse and evaluate the importance of studies and the findings, using the data gathered and its reliability to support all conclusions.
<b>Notes</b>	It is assumed that all learners will have undertaken a course of study in the field of statistics and be familiar with error limits, confidence limits, extrapolation, and regression analysis.  The three functional skills units for ICT (use ICT appropriately, find and select information, and develop, present and communicate information) are abbreviated as follows: Use ICT, F&S ICT and DPC ICT.

Topic	Activities, assignments, assessments	LO and AC	PLTS	FS	GLH	Resources and other comments
<p><b>1</b> Introduction to unit and the need for statistical analysis</p>	<p>Review the necessary statistical skills that will be needed within this module:</p> <ul style="list-style-type: none"> <li>• The importance of primary and difference to secondary data</li> <li>• The reliability of secondary data and the need to know the original research objective</li> <li>• The review of limits of measurability</li> <li>• The reproducibility of the data.</li> <li>• Consideration must be given to the possible introduction of bias</li> </ul> <p>Case studies must be evaluated as to which information presented is from primary and which from secondary data sources. Learners should also evaluate the use of statistical analysis within the case studies to draw conclusions.</p>	AC3b	CT2 IE1	RSM APM IPM	3	Cover affordability when planning, which will ensure that planning is realistic and achievable.
<p><b>2</b> Environmental evaluation and the use of data</p>	<p>The tutor should lead a discussion on what is meant by:</p> <ul style="list-style-type: none"> <li>• Environmental evaluation</li> <li>• The problem of an evaluation being self-fulfilling</li> <li>• The problem of introducing monitoring that can skew the data being monitored</li> <li>• The need for the data to be analysed impartially</li> </ul> <p>Learners must describe in a report the best methods to be used to ensure that data gathered is robust.</p>	AC1a–c	CT1, 2 TW2	SL	3	

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<b>3</b> Review of a research project from a professional's viewpoint	Invite an ecologist as a guest speaker. The talk should cover: <ul style="list-style-type: none"> <li>• How a research project is chosen</li> <li>• Why research programs are essential in understanding the changes that are happening to our climate</li> <li>• How the value of the results compiled is calculated and how these results contribute to future environmental decision making</li> </ul> <p>Learners should use a recent research project to look at the planning steps that were taken, the methodology used and results and their analysis.</p>	AC1a–c	CT1, 2	SL W	3	
<b>4</b> Choice of project	<p>In groups, learners must choose a habitat and a proposed development of the habitat. They should establish what sort of monitoring is possible and whether the monitoring is invasive and will have an effect itself. Where possible learners are to choose automated monitoring techniques.</p> <p>Learners must produce a plan that details what variables will be monitored, how they will be monitored and the reason for monitoring these variables. The methodology of collecting the data must be included as well as how the data may be used to support the proposed development.</p>	AC1a, b	TW1, 2 SM2 EP3	SL	3	From this week on, time to be given for data to be gathered for assessment task

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5 Time pressures	<p>Conduct a class discussion on the time pressures of data gathering, and what can be done to improve the availability of data.</p> <p>Learners must create a presentation for a committee outlining why more time is needed to gather data to fully assess the impact of a development.</p>	<p>AC2a</p> <p>AC3a</p>	TW2, 5	<p>Use ICT</p> <p>F&amp;S ICT</p> <p>DPC ICT</p>	3	
6 Trend analysis	<p>Conduct a group discussion on the following statement: 'It is said that you can prove anything with statistics.'</p> <p>The tutor should lead a discussion on the problems of trend analysis and why a straight line is not always the best fit.</p> <p>Learners should be given three sets of data and asked to produce a variety of different conclusions from an analysis of the data.</p>	<p>AC2a, b</p> <p>AC3a</p>	CT5	<p>RSM</p> <p>APM</p> <p>IPM</p>	3	
7 Sources of error	<p>Conduct a group discussion on how error can enter into a data set and what measures can be taken to minimise errors.</p> <p>Learners must prepare a report on what steps they have taken to reduce errors.</p>	<p>AC2a, b</p> <p>AC3a</p>	IE1	<p>SL</p> <p>W</p>	3	

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<b>8</b> Strength and weaknesses of data  Methods of monitoring	Learners should research sources of secondary data that are relevant to the proposed habitat and the proposed development.  Follow with a group discussion on the strengths and weaknesses of data and the causes of error.  Discuss the ideal means of monitoring and why frequently this methodology is not available.	AC2a, b  AC3b–d	EP1  CT2	SL	3	
<b>9</b> Introduction to Environmental Impact Assessments (EIAs)	Define 'Environmental Impact Assessment (EIA)'.  Conduct a group discussion on: <ul style="list-style-type: none"> <li>• What developments require an EIA?</li> <li>• Who prepares the EIA?</li> <li>• Who needs to be consulted?</li> <li>• How is the consultation organised?</li> <li>• What are the strengths and weaknesses of the current system?</li> <li>• Does the current system appear to favour any party?</li> </ul> In groups of three, learners must prepare a presentation to give to a local community forum explaining the need of EIA and the consultations.	AC2a–d	TW1, 2  SM2  EP2	Use ICT  F&S ICT  DPC ICT  SL	3	<a href="http://www.communities.gov.uk/publications/planningandbuilding/environmentalimpactassessment">www.communities.gov.uk/publications/planningandbuilding/environmentalimpactassessment</a>

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<b>10</b> Environmental evaluation of habitat v. Environmental Impact Assessments	<p>The tutor should lead a discussion on how the environmental evaluation of habitat and EIAs complement each other and differ from each other, and how one can feed in to the other.</p> <p>Learners must understand where the judgements or conclusions to each are drawn from and how robust data is needed to support these conclusions.</p> <p>Learners must be given three environmental evaluations to compare and contrast. The outcomes should be presented in a report.</p>	AC1a AC2a	SM2 IE1, 3	SL W	3	
<b>11</b> EIAs and their role in sustainability	Drawing on the work undertaken in Unit 7 on the three pressures (environmental, social and economic), the learners are to examine an EIA, together with the attendant documentation. They should produce a short report that references the EIA and documentation and highlights the three pressures. They should also include a score (on a scale of one to three) on the influence that each pressure has on an EIA.	AC2d AC3e	SM2 IE1, 3	Use ICT F&S ICT DPC ICT	3	Links with Unit 7.
<b>12</b> The role of risk assessment in environmental work	For one of the environmental evaluations that the learners considered in week 10, the learner is to specify what risks are inherent in carrying out this assessment. They should then write up a full set of risk assessments for the evaluation.	AC3b	EP1	W	3	Links with Unit 8.

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<b>13</b> Scientific basis of EIA	<p>From the EIA studied in week 11, the learners are to examine it and the appendices to ascertain what data was used, whether it was primary or secondary, what research methodology was used and how that linked to the conclusions reached.</p> <p>The learners should to create a presentation of the findings with a target audience of a group of local councillors in mind.</p>	AC3a, d	EP2  CT1	Use ICT  F&S ICT  DPC ICT	3	
<b>14</b> The importance of location	<p>Conduct a group discussion on whether the location of a habitat and the proposed development affect the outcome.</p> <p>The learners should examine a different environmental evaluation from week 10, expanding the geographical perspective to look at the wider picture. They should also investigate how cartography has been used to enhance (or otherwise) the evaluation.</p> <p>The learners are to produce a short report on how more could have been made of the location-relevant information.</p>	AC1a, c  AC3c–e	SM2  IE3	SL  W	3	

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15 What is important?	<p>Session entitled “Beauty is in the eye of the beholder, balancing the equation”</p> <p>Conduct a group discussion on bias in arguments and why people take the stands that they do.</p> <p>From the EIA studied, learners must write a report highlighting any areas of bias that they see in the documentation and where possible giving a plausible reason for the bias.</p>	<p>AC2b</p> <p>AC3e</p>	SM2	<p>SL</p> <p>W</p> <p>R</p>	3	
16 Why did it fail?	<p>Present a case study on a development that failed to be given the green light. From the EIA, learners are to draw up a report on how the supporting data could have been improved and how the recommendation could have drawn on the data more convincingly.</p>	AC3e	EP2, 3	DPC ICT	3	
17 Strength in depth	<p>Present a case study on an environmental evaluation that made a particularly strong case for the value of a habitat.</p> <p>Working in groups, learners must produce a presentation for the rest of the groups on the good points within this evaluation.</p>	AC3d, e	TW1, 5	DPC ICT	3	

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<b>18</b> He who shouts loudest gets	<p>Discuss the pressure of public opinion or a vocal minority. Use the McDonald's court case as a case study.</p> <p>Would an EIA have made a difference? (Remember this was before the EU introduced EIAs.) What parts of this case should have had an EIA?</p> <p>Learners must produce a summary of the points relevant to EIA and how the effect of this case has changed the information that McDonald's releases.</p>	<p>AC2c, d</p> <p>AC3e</p>	<p>SM2</p> <p>CT2</p>	<p>SL</p> <p>F&amp;S ICT</p>	3	<a href="http://www.mcspotlight.org/case">www.mcspotlight.org/case</a>
<b>19</b> Assessment					3	
<b>20</b> Assessment					3	