**Module Code**: EV939  
**Module Title**: Environmental Impact Assessment

**Module Registrar**: Dr Elsa João, Senior Lecturer, Department of Civil Engineering, room 605, Level 6, Graham Hills Building; Tel.: 0141 548 4056; email: elsa.joao@strath.ac.uk.

**Other Lecturers Involved**: Some contributions from external practitioners

**Credit Weighting**: 10  
**Semester**: 2  
**Academic Level**: 5

**Compulsory/optional/elective class**:  
**Compulsory to**:  
MSc in Environmental Engineering  
**Optional to**:  
MEng 5th Year; MSc Environmental Science; MSc Science, Technology & Sustainability; MSc Environmental Studies; MSc Environmental Health; MSc Global Water Sustainability; MRes Geo-Environmental Engineering; MRes IPPC; MRes Sustainable Construction & Infrastructure

**Prerequisites**: None

**Module Format and Delivery (hours)**:

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<tr>
<th>Lectures</th>
<th>Tutorials</th>
<th>Assignments</th>
<th>Field visit</th>
<th>Private Study</th>
<th>Total</th>
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<td>22</td>
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<td>36</td>
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**General Aims**

Environmental impact assessment (EIA) relates to the process of identifying, evaluating, and mitigating the biophysical, social, economic, cultural and other relevant effects of development proposals prior to major decisions being taken and commitments made. This module aims to provide students with an introduction to some of the methods used to predict environmental impacts, and to see how these may be used to integrate environmental factors into decisions. The module emphasises the use of EIA as a design tool and focuses on issues related to the quality of the EIA process overall and of Environmental Impact Statements in particular. The module draws principally on the UK planning context of environmental impact assessment (also called Environmental Assessment), but also takes account of EIA experience in other countries and international organisations, together with developing international experience of Strategic Environmental Assessment (SEA).

**Specific Learning Outcomes**

**Knowledge and Understanding**

On completion of the module students should:

- be conversant with the regulatory requirements for statutory EIA;
- be familiar with some of the methodologies commonly used in preparing EIA, including public participation;
- understand the relationship between EIA and development decisions;
- understand the ways in which EIA can contribute to sustainable development and its limitations in this regard; and
- be familiar with issues regarding the links between EIA and SEA.
Disciplinary/Professional skills

- learn how to evaluate the quality of an Environmental Impact Statements using the criteria used in the UK by the Institute of Environmental Management and Assessment (IEMA).
- Sound knowledge and skills portfolio on EIA that can be offered and utilised in environmental and engineering consultancies, local government and environmental regulators.

Transferable skills

- Research skills and report writing
- Communicate effectively (written, verbal and graphic)
- Time management and ability to work independently
- Team-working & building

Syllabus

The course will be taught using a combination of lectures, group discussions, seminars, case studies and presentations by practitioners.

The module requires the completion of the following parts (although some of the guest speakers may change every year):

- **Week 1** - Intro to the course. Introduction to Environmental Impact Assessment (EIA). The quality of Environmental Impact Statements (EIS). Discussion on the Institute of Environmental Management and Assessment’s criteria for evaluating EIS. (Dr Elsa João).
- **Week 2** - Carrying out an EIA – key methods. Key implementation problems of the EIA process. Discussion on the principles of EIA best practice. (Dr Elsa João).
- **Week 3** - The EIA of the M74 road extension in Glasgow (Anna McLauchlan, Research Student, David Livingstone Centre for Sustainability, Civil Engineering).
- **Week 4** - EIA in the developing world (Isobel Stanley, Technical Director, Edge Consultants)
- **Week 5** - Nature conservation, legal designations and wildlife law (including the Habitats Directive) and their links to EIA. (Dr Paul Walton, Species and Habitats Policy Officer, RSPB Scotland).
- **Week 6** - SNH Students’ Seminar: Planning, Landscape & the Natural Heritage [For MSc students only.]
- **Week 7** - Lecture and workshop on the key principles of Strategic Environmental Assessment (SEA) and how it relates to EIA. (Dr Elsa João)
- **Week 8** - EIA of the Black Law Windfarm. (Dr Simon Zisman, RPS Group Plc)
- **Week 9** - What is the value of EIA? (Dr Ross Marshall, Environment Agency).
- **Week 10** - Consultation and public participation in EIA. Uncertainty and subjectivity issues. Data issues for EIA. The importance of scale issues. The case for scale guidelines. (Dr Elsa João).
- **Week 11** - Talk about the field visit to be carried out.
- **Week 12** - Field Visit [exact case study changes every year as it requires the visit of site that is either about to being developed or one that is still being built]

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

**Criteria for assessment**
The course will be assessed by have two assignments only (i.e. there is no exam):

**Assignment 1** (contributes to 30% of the final mark) – GROUP WORK
Working in groups of two, write a report, not exceeding 2000 words in length, evaluating the quality of a given environmental impact statement using the criteria used by the IEMA.

**Assignment 2** (contributes to 70% of the final mark) – INDIVIDUAL WORK
The following essay, not exceeding 3000 words in length:

**Evaluate the extent to which biased evaluations, narrow boundaries, data gaps and/or simplifying assumptions are affecting the legitimacy of the EIA process, and propose reforms to existing policy that would help overcome such problems.** [Please note that it is crucial that you illustrate your answer with case studies drawn from guest speakers’ presentations, the literature, environmental impact statements (EIS) studied and/or field visit.]

Please note the following advice in relation to the assignment 2:
- a) Essays should combine academic and applied discussion and analysis. In relation to academic
content, the essay should draw on the wider literature and should include supporting references. In relation to applied content, the essay should draw upon experience derived from real examples and case studies to illuminate issues of wider relevance.

b) It is crucial that you select key issues that you deem to be significant and present them clearly and persuasively. Your introduction should explain and justify your choice.

c) Your mark for this assignment will reflect:
1. The extent to which your essay directly addresses the essay topic.
2. Your selection of the key issues that you deem to be significant.
3. The structure, logic and clarity of your argument.
4. Evidence of a critical approach to the topic (rather than a descriptive approach).
5. How well referenced the essay is.
6. Use of case study material.
7. The depth of understanding of the subject area – this will be done partly by reference to choice of issues, but more importantly by the way in which those issues are addressed and the connections drawn in the argument.

d) Note that the assessment of point 7 above is only possible for essays that are clear, well argued and well structured, i.e. even if you have a highly developed understanding of the EIA process, a poorly argued essay will obscure this from the marker.

e) Please impose an explicit structure by having sub-headings that are closely linked to the overall argument of your essay (N.B. 1st section is the “introduction” and the final is the “conclusions”).

f) The essay should be well referenced and include references not only from books but also from papers published in international refereed journals. Therefore, one of your main sources of information must be the database GEOBASE: www.lib.strath.ac.uk/artsweb/GEOGDB.htm

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<th>Examination</th>
<th>Duration</th>
<th>Weighting</th>
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(1) Groupwork
(2) Individual essay

Resit Examinations: Essay with a new topic.

Core Reading (further reading will be provided in class)


**Level of Achievement Statement for a JBM Accredited Engineering Module**

**Module Code:** EV939 Environmental Impact Assessment  
**University of Strathclyde, Department of Civil Engineering**

<table>
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<tr>
<th>Level in Degree Programme (years 1 to 5)</th>
<th>Module Objectives and/or Principal Outcomes in Support of the Level</th>
<th>Evidence of Achievement (e.g. examination script, design report, dissertation, lab. report, etc.)</th>
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<td><strong>EC</strong> UK Level (Levels 6 or 7 appropriate to years 4 and 5 resp.)</td>
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**GENERAL LEARNING OUTCOMES**

| Knowledge and Understanding | Critical understanding of some of the methods used to predict environmental impacts (including public participation) and how these may be used to integrate environmental factors into decisions.  
Critical understanding of the regulatory requirements for statutory EIA.  
Evaluate the key implementation problems of the EIA process.  
Appreciation of how EIA can be used as a design tool in development and civil engineering projects.  
Evaluate issues related to the quality of the EIA process overall and of Environmental Impact Statements in particular.  
Critical understanding of data issues for EIA, including uncertainty, subjectivity and the importance of scale issues.  
Understand the relationship between EIA and development decisions.  
Evaluate the ways in which EIA can contribute to sustainable development and its limitations in this regard.  
Understand key principles of strategic environmental assessment (SEA) and how it relates to EIA. | GROUP WORK - Working in groups of two, students are required to write a report, not exceeding 2000 words in length, evaluating the quality of a given environmental impact statement using the criteria used in the UK by the Institute of Environmental Management and Assessment (IEMA) (30%)  
Essay discussing critically how biased evaluations, narrow boundaries, data gaps and/or simplifying assumptions might be affecting the legitimacy of the EIA process, and propose reforms to existing policy that would help overcome such problems (70%) |

**GROUP WORK - Working in groups of two, students are required to write a report, not exceeding 2000 words in length, evaluating the quality of a given environmental impact statement using the criteria used in the UK by the Institute of Environmental Management and Assessment (IEMA) (30%)**

**Essay discussing critically how biased evaluations, narrow boundaries, data gaps and/or simplifying assumptions might be affecting the legitimacy of the EIA process, and propose reforms to existing policy that would help overcome such problems (70%)**
### Intellectual Abilities
The course covers a wide range of spatio-temporal scales. Temporal scales range from short-term (e.g. construction impacts of less than a year) to long term (e.g. operational and decommissioning impacts of 20 or more years). Spatial scales cover national, regional and local. Also environmental effects considered need to include: secondary, cumulative, synergistic, short, medium and long-term, permanent and temporary, positive and negative effects.

### Practical Skills
Learn how to evaluate the quality assessment of an Environmental Impact Statement using the criteria used in the UK by the Institute of Environmental Management and Assessment (IEMA). Take part in a field visit of site that has been subject to an EIA and that is either about to being developed or one that is still being built. Practical skills in analyses and interpretation of data. Research skills and methods IT skills Report-writing Sound knowledge and skills portfolio on EIA that can be offered and utilised in environmental and engineering consultancies, local government and environmental regulators.

| General Transferable Skills | Research skills Skills in literature review, analysis, synthesis, and report writing Numeracy and data manipulation Communicate effectively (written, verbal and graphic) Time management and working to deadlines | Group work evaluating the quality of an EIS. Essay discussing critically how biased evaluations, narrow boundaries, data gaps and/or simplifying |
### Ability to work independently
Team-working & building
Strategic planning skills - forward thinking and thinking across disciplinary boundaries.
Student interaction is encouraged throughout the class through directed reading, student-led question sessions & structured feedback
Ability to plan, conduct and report on specific research topics
Critical analysis and evaluation
Reasoned argumentation and explanation
Familiarity with electronic information resources

### SPECIFIC LEARNING OUTCOMES IN ENGINEERING

| **Underpinning Science and Mathematics** | Understanding of underlying physical and chemical principles and processes that govern environmental quality, human health, deterioration of cultural heritage including architectural and archaeological heritage. | As above |
| **Engineering Analysis** | Understanding that the consideration of environmental impacts early in the development of engineering projects will allow for a better identification of suitable (and unsuitable) locations for development and a better assessment of options. | As above |
| **Economic, Social and Environmental Context** | Class focuses on EIA and therefore covers all these aspects: biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage and landscape. | As above |
| **Design** | Students learn that EIA, if used early rather than an after-thought, it can be used as a design tool by minimising impacts of development and civil engineering projects or by providing enhancement. | As above |
| **Engineering Practice** | Through the involvement of practitioners in the field (from environmental consultancies, NGOs, local authorities) current practice is introduced to students. | As above plus appropriate questions to invited practitioners. |

Field visit.