MODULE DESCRIPTOR 2021/22

EV939 - ENVIRONMENTAL IMPACT ASSESSMENT

Registrar: : Dr Elsa João, Senior Lecturer, Department of Civil and Environmental Engineering, level 5, James Weir Building, Tel.: 0141 548 4056; email: elsa.joao@strath.ac.uk.	**Taught To (Programme):** MSc in Sustainability & Environmental Studies MSc Environmental Engineering MSc in Hydrogeology MSc Civil Engineering MSc Environmental Entrepreneurship MSc Sustainable Engineering (Faculty degree) MEng 5th Year MRes Geo-Environmental Engineering MRes Integrated Pollution Prevention & Control (IPPC) MRes Climate Change Adaptation	
Other Lecturers Involved:	**Credit Weighting: 10**	**Semester: 2**
Assumed Pre-requisites: None	**Compulsory/ optional/ elective class** Compulsory to: MSc in Sustainability & Environmental Studies Optional to: MSc Environmental Engineering MSc in Hydrogeology MSc Civil Engineering MSc Environmental Entrepreneurship MSc Sustainable Engineering (Faculty degree) MEng 5th Year MRes Geo-Environmental Engineering MRes Integrated Pollution Prevention & Control (IPPC) MRes Climate Change Adaptation	**Academic Level: 5**

Class Format and Delivery (hours):

Lecture	Tutorial	Laboratory	Coursework	Project	Private Study	**Total**
20				40	40	100

Class Aim(s)

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 class provides an introduction to the methods used to predict environmental impacts, and evaluates how these may be used to integrate environmental factors into decisions. The class draws principally on the UK planning context of environmental impact assessment of individual projects (project EIA), but also takes account of EIA experience in other countries and international organisations. Participants evaluate the quality of Environmental Statements and of the EIA process using the Institute of Environmental Assessment and Management (IEMA) methodology. The class discusses how EIA can be used a pro-active design tool for projects and how it can contribute to the enhancement of environmental, social and health issues. The class has the contribution of key practitioners in the field and includes different case studies such as mining, roads, and on-shore and off-shore windfarms.

Learning Outcomes

On completion of the module the student is expected to be able to

LO1 Be able to be conversant with the regulatory requirements for statutory EIA throughout the world. (assessments 1-3)

LO2 to be familiar with some of the methodologies commonly used in preparing EIA (assessments 1-3).

LO3 Be competent in the evaluation of the quality of an Environmental Impact Statements and understand the requirements of the IEMA EIA Quality Mark (assessment 2)

LO4 Be able to understand the relationship between EIA and development decisions and understand the ways in which EIA can contribute to sustainable development and project design, and its limitations in this regard. (assessments 1-3)

(UK SPEC suggests no more than 4 learning outcomes per module. Statements must be broad and be syllabus free and link in with the intended learning outcomes on the programme specifications.)

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 and to Environmental Impact Assessment (EIA). Brief explanation of all assignments. Carrying out an EIA – key stages. Key principles of Strategic Environmental Assessment (SEA) and how it relates to EIA,
- Week 2 - Key implementation problems of the EIA process. The quality of Environmental Impact Statements (EIS). IEMA EIA Quality Mark.
- Week 3 - Data for EIA. Carrying out an EIA – key methods. Use of GIS for EIA. Uncertainty and subjectivity issues. Consultation and public participation in EIA. The importance of scale issues in EIA and the case for scale guidelines.
- Week 4 - Mitigation, enhancement issues and the use of EIA as a design tool. Key principles of ecological impact assessment. What are Environmental Management Plans (EMPs), how EMPs link to EIA and the role of the Environmental Clerk of Works. Adaptive management.
- Week 5 - Consultation and public participation in EIA. Cumulative effects assessment. Follow-up. The value of EIA. Scenario simulation.
- Week 6 - Understanding the relationship between EIAs and development decisions – the case of a controversial development. Chris Ford (Researcher, University of Strathclyde).
- Week 7 - Social Impact Assessment – key principles and links to EIA.
- Week 8 – Neart na Gaoithe Offshore Wind Farm and onshore grid connection (buried cable and substation) - Ewan Walker, Environment Manager, Mainstream Renewable Power.
- Week 9 - EIA of onshore wind farm development (Kenny Taylor, Policy and Advice Officer - Renewable Energy; Scottish Natural Heritage (SNH)).
- Week 10 - Discussion about the material covered in the class, and on enhancement issues and the use of EIA as a design tool. What are Environmental Management Plans (EMPs), how EMPs link to EIA and the role of the Environmental Clerk of Works.

N.B. The class runs over 10 weeks.

Assessment Criteria

Criteria
For each of the Module Learning Outcomes the following criteria will be used to make judgements on student learning:

[Note: Criteria break the LO down into 'teachable' elements but do not become syllabus orientated i.e. no mention of CAD package names, components etc.]

LO1
C1 How students show a critical understanding of the regulatory requirements for statutory EIA throughout the world (assessments 1-3)

LO2
C1 How familiar students are with regards to methodologies commonly used in preparing EIA (assessments 1-3).

LO3
C1 How competent students are in the evaluation of the quality of an Environmental Impact Statements and how they understand the requirements of the IEMA EIA Quality Mark (assessment 2)
C2 How well written and structured the report is (assessment 2)

LO4
C1 How students shows a critical understanding of the relationship between EIA and development decisions and understand the ways in which EIA can contribute to sustainable development and project design, and its limitations in this regard. (assessments 1-3)

The standards set for each criterion per Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessments.

Principles of Assessment and Feedback (*https://www.strath.ac.uk/staff/policies/academic/*)

2. Assignments are routine and evenly distributed throughout the class.
4. Students will have ample opportunities (via multiple projects) to incorporate feedback and improve their performance. Including individual meetings with class tutor to provide feedback on drafts of reports produced by group work.
9. Departmental policy: carry out mid-term class assessments and provide feedback to students.
10. Establishment of MSc cohorts tend to foster the development of learning groups. They student interact closely with each other, and tend to be highly supportive.
11. Encourage self-motivation and mutual respect in group projects.

Recommended Reading

Beattie, R. (1995), Everything you already know about EIA (but don't often admit). *Environmental Impact Assessment Review*, 15: 109-114. **[Strathclyde 614.7 Serial]**

English Nature, RSPB, WWF-UK and BWEA (2001) Wind farm development and nature conservation: A guidance document for nature conservation organisations and developers when consulting over wind farm proposals in England. English Nature, RSPB, WWF-UK and BWEA **[http://www.bwea.com/pdf/wfd.pdf]**

(*) Glasson, J., Thérivel, R. and Chadwick, A. (2005) *Introduction to Environmental Impact Assessment,* 3rd Edition, London; New York : Routledge. **[Strathclyde D 333.7 GLA]**

IAIA (1999), *Principles of EIA best practice*. IAIA. **[http://www.iaia.org/]**

IEMA (2011) The state of EIA Practice in the UK. Institute of Environmental Management and Assessment (IEMA) (http://www.iema.net/eiareport)

João, E. (2002), How scale affects environmental impact assessment. *Environmental Impact Assessment Review*, 22 (4): 287-306. **[Strathclyde 614.7 Serial]**

João, E. (2005) Key principles of SEA. In: M. Schmidt, E. João and Albrecht, E. (eds.), *Implementing Strategic Environmental Assessment,* Springer-Verlag, pp.3-14**. [Strathclyde Library D 349.4089 IMP]**

João, E, F Vanclay and L den Broeder (2011), Emphasising enhancement in all forms of impact assessment: introduction to a special issue. *Impact Assessment & Project Appraisal*, September, 29(3): 170–180. [**Available online via Strathclyde registration]**

European Commission (2012), Proposal for amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment. COM(2012) 628 final, Brussels, 26.10.2012

http://ec.europa.eu/environment/eia/pdf/com_628/1_EN_ACT_part1_v7.pdf
Ortolano, L. and Shepherds, A. (1995), Environmental Impact Assessment. In: Vanclay, F. and Bronstein, D. (eds.), *Environmental and Social Impact Assessment*, pp. 3-30. John Wiley. **[Library D 333.7 BAR]**
Scottish Government (2011) Planning Circular 3 2011: Guidance on The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011. Scottish Government **[http://www.scotland.gov.uk/Publications/2011/06/01084419/0]**
Steinemann, A. (2000) Rethinking human health impact assessment. *Environmental Impact Assessment Review*, 20 (6): 627-645. **[Strathclyde 614.7 Serial]**
Vanclay, F. (2006), Principles for social impact assessment: A critical comparison between the international and US documents. *Environmental Impact Assessment Review*, 26 (1): 3-14. **[Strathclyde 614.7 Serial]**
Wilkins, H. (2003), The need for subjectivity in EIA: discourse as a tool for sustainable development. *Environmental Impact Assessment Review*, 23: 401-414. **[Strathclyde 614.7 Serial]**

PLEASE NOTE:
Students need to gain a summative mark of ~~40%~~ / 50% ***(please delete as appropriate)*** **to pass the module. Students who fail the module at the first attempt will be re-examined during the August diet. This re-examination will consist entirely of exam / coursework / viva** ***(please delete as appropriate).***

Resit Arrangements

Assignment

Approved

Programme Director Signature:
Date of Last Modifications:

(Updated 9th August 2018)

Assessment and Feedback Schedule

Class Code	EV939	Class Title	ENVIRONMENTAL IMPACT ASSESSMENT

Brief Description of Assessment

a) Individual online work as follows:

1: DB most interesting paper (worth 3% final mark)

b) Group project:

2: Group project on EIA as a design tool (worth 47% of the final mark) – students to pick their own groups – groups can be 4-5 people each.

c) online class test - done via Myplace:

3: 1-hour online test done during exam period (worth 50% of the final mark)

Indicate in the tables below the Hand-Out (H), Submission (S) and Feedback (F) dates for each lab report/coursework/project and the timing of each Exam/Class Test (E), (T). Include duration of exam in brackets (e.g. E (2)).

Semester 1

Assessment type (& title)	LOs	Weight (%)	Individual / Group	WK1	WK2	WK3	WK4	WK5	WK6	WK7	WK8	WK9	WK10	WK11	Exam Period

Semester 2

Assessment type (& title)	LOs	Weight (%)	Individual / Group	WK1	WK2	WK3	WK4	WK5	WK6	WK7	WK8	WK9	WK10	WK11	Exam Period

1: DB most interesting paper	1,2,3,4	3	I	H		S			F						
2: Group project on EIA as a design tool	1,2,3,4	47	G	H					S			F			
1-hour online test done during exam period	1,2,3,4	50	I												E (1)

JBM/Programme Threads

Thread	Primary	Secondary	Contributory
Design			**X**
Health, Safety & Risk Assessment			**X**
Sustainability		**X**	
Maths for Engineers			
Industrial Engagement			**X**
Digital Technologies			**X**

Mapping Module Learning Outcomes to AHEP

Module Learning Outcome	Engineering Council AHEP competencies: Knowledge, Understanding and Ability
LO1 Be able to be conversant with the regulatory requirements for statutory EIA throughout the world.	• Economic, legal, social, ethical and environmental context - Understanding of the need for a high level of professional and ethical conduct in engineering, a knowledge of professional codes of conduct and how ethical dilemmas can arise • Economic, legal, social, ethical and environmental context - Understanding of the requirement for engineering activities to promote sustainable development and ability to apply quantitative techniques where appropriate • Economic, legal, social, ethical and environmental context - Awareness of relevant legal requirements governing engineering activities, including personnel, health & safety, contracts, intellectual property rights, product safety and liability issues, and an awareness that these may differ internationally • Engineering practice - Knowledge of relevant legal and contractual issues
LO2 to be familiar with some of the methodologies commonly used in preparing EIA.	• Science and mathematics - Ability to apply and integrate knowledge and understanding of other engineering disciplines to support study of their own engineering discipline and the ability to evaluate them critically and to apply them effectively • Science and mathematics - Understanding of concepts from a range of areas, including some outside engineering, and the ability to evaluate them critically and to apply them effectively in engineering projects. • Engineering analysis - Understanding of, and the ability to apply, an integrated or systems approach to solving complex engineering problems • Engineering analysis - Ability to use fundamental knowledge to investigate new and emerging technologies • Economic, legal, social, ethical and environmental context - Knowledge and understanding of the commercial, economic and social context of engineering processes

Module Learning Outcome	Engineering Council AHEP competencies: Knowledge, Understanding and Ability
	• Economic, legal, social, ethical and environmental context - Knowledge and understanding of management techniques, including project and change management, that may be used to achieve engineering objectives, their limitations and how they may be applied appropriately
LO3 Be competent in the evaluation of the quality of an Environmental Impact Statements and understand the requirements of the IEMA EIA Quality Mark.	• Engineering analysis - Understanding of, and the ability to apply, an integrated or systems approach to solving complex engineering problems • Engineering analysis - Ability to use fundamental knowledge to investigate new and emerging technologies • Engineering analysis - Ability to extract and evaluate pertinent data and to apply engineering analysis techniques in the solution of unfamiliar problems. • Design - Work with information that may be incomplete or uncertain, quantify the effect of this on the design and, where appropriate, use theory or experimental research to mitigate deficiencies • Design - Apply advanced problem-solving skills, technical knowledge and understanding to establish rigorous and creative solutions that are fit for purpose for all aspects of the problem including production, operation, maintenance and disposal • Design - Communicate their work to technical and non-technical audiences • Design - Demonstrate wide knowledge and comprehensive understanding of design processes and methodologies and the ability to apply and adapt them in unfamiliar situations • Economic, legal, social, ethical and environmental context - Understanding of the need for a high level of professional and ethical conduct in engineering, a knowledge of professional codes of conduct and how ethical dilemmas can arise • Economic, legal, social, ethical and environmental context - Knowledge and understanding of management techniques, including project and change management, that may be used to achieve engineering objectives, their limitations and how they may be applied appropriately • Economic, legal, social, ethical and environmental context - Understanding of the requirement for engineering activities to promote sustainable development and ability to apply quantitative techniques where appropriate • Engineering practice - Understanding of contexts in which engineering knowledge can be applied (eg operations and management, application and development of technology, etc) • Engineering practice - Understanding of appropriate codes of practice and industry standards • Engineering practice - Awareness of quality issues and their application to continuous improvement • Engineering practice - A thorough understanding of current practice and its limitations, and some appreciation of likely new developments • Engineering practice - Understanding of different roles within an engineering team and the ability to exercise initiative and personal responsibility, which may be as a team member or leader.

Module Learning Outcome	Engineering Council AHEP competencies: Knowledge, Understanding and Ability
	• Additional general skills - Apply their skills in problem solving, communication, working with others, information retrieval and the effective use of general IT facilities • Additional general skills - Plan self-learning and improve performance, as the foundation for lifelong learning/CPD • Additional general skills - Monitor and adjust a personal programme of work on an on-going basis • Additional general skills - Exercise initiative and personal responsibility, which may be as a team member or leader
LO4 Be able to understand the relationship between EIA and development decisions and understand the ways in which EIA can contribute to sustainable development and project design, and its limitations in this regard.	• Design - Understand and evaluate business, customer and user needs, including considerations such as the wider engineering context, public perception and aesthetics • Design - Investigate and define the problem, identifying any constraints including environmental and sustainability limitations; ethical, health, safety, security and risk issues; intellectual property; codes of practice and standards • Design - Demonstrate wide knowledge and comprehensive understanding of design processes and methodologies and the ability to apply and adapt them in unfamiliar situations • Design - Demonstrate the ability to generate an innovative design for products, systems, components or processes to fulfil new needs. • Economic, legal, social, ethical and environmental context - Understanding of the need for a high level of professional and ethical conduct in engineering, a knowledge of professional codes of conduct and how ethical dilemmas can arise • Economic, legal, social, ethical and environmental context - Knowledge and understanding of the commercial, economic and social context of engineering processes • Economic, legal, social, ethical and environmental context - Knowledge and understanding of management techniques, including project and change management, that may be used to achieve engineering objectives, their limitations and how they may be applied appropriately • Economic, legal, social, ethical and environmental context - Understanding of the requirement for engineering activities to promote sustainable development and ability to apply quantitative techniques where appropriate • Economic, legal, social, ethical and environmental context - Awareness of relevant legal requirements governing engineering activities, including personnel, health & safety, contracts, intellectual property rights, product safety and liability issues, and an awareness that these may differ internationally • Engineering practice - Ability to apply engineering techniques taking account of a range of commercial and industrial constraints • Engineering practice - Understanding of different roles within an engineering team and the ability to exercise initiative and personal responsibility, which may be as a team member or leader.