



Department of: Environmental Science and Health

College of: Science

University of: Salahaddin

Subject: Environmental Impact Assessment (EIA)

Course Book: Fourth Stage/ Second Semester

Lecturer's name: Assistant Professor Dr. Siraj

Muhammed Abdulla Goran (Ph.D.)

Academic Year: 2022/2023

Course Book

1. Course name	Environmental Impact Assessment
2. Lecturer in charge	Dr. Siraj Muhammed Abdulla Goran (Ph.D.)
3. Department/ College	Department of Environmental Sciences / College Science
4. Contact	e-mail: siraj.abdulla@su.edu.krd Tel: 009647504546250
5. Time (in hours) per week	Theory: 2
6. Office hours	3-3
7. Course code	
8. Teacher's academic profile	<p>* Graduated at the Department of Community of the Health, Erbil Technical Institute/ Medical Institute (1997-1998).</p> <p>* Graduated at the Department of Biology, Salahaddin University/ College of Science (2003-2004).</p> <p>* M.Sc. in Fresh Water ecology and phycology at the Salahaddin University, (2006). Thesis title “Limnology And Non-Diatom Phytoplankton Composition Of Dilope Spring And Kesnezan Impoundment, Hewler –Kurdistan Region Of Iraq”.</p> <p>* Ph.D. at the Salahaddin University, (2014). Dissertation title “Ecological Study On Dukan Lake With Particular References To Bioaccumulation Of Some Heavy Metals And Pahs In Fish And Gull Tissues –Sulaimani –Kurdistan Region O Iraq 2014.”</p> <p>I have 9 articles (7 published and the other two accepted for publishing) which include:</p> <p>*</p> <ol style="list-style-type: none"> 1. Effect of different cadmium levels on growth and biochemical parameters of <i>Cyprinus carpio</i> fingerlings reared in a close system. Zanco Journal, Volume 31, Number 4, 2019 2. Using of Liptocitro as a growth promoter on common carp <i>Cyprinus carpio</i> L. 1758 reared in cage culture. Zanco Journal. 2016 3. Determination of Heavy Trace Metals in Different Fish Species from Derbendikhan Lake, Kurdistan Region of Iraq, Erbil Polytechnique Journal, Volume 7, No. 1 2017. 4. Water Quality and Physiological Parameters of Common Carp Fingerling Fed on Jerusalem artichoke Tubers. Erbil Polytechnique Journal,

	<p>Volume 6, No. 3 2016.</p> <p>5. Ecological Study On Dukan Lake With Particular References To Bioaccumulation Of Some Heavy Metals And PAHs In Fish And Gull Tissues – Sulaimani –Kurdistan Region Of Iraq 2014</p> <p>6. Quality and Hygienic Status of the Main Sewage Channel of Koya Town/Erbil, Kurdistan Region-Iraq 2012</p> <p>7. The Efficiency of Drinking Water Treatment Processes in Removing of some PAHs Compounds from Water In Erbil City-Iraq 2009</p> <p>8. Evaluation Of Ifraz Water Treatment Plants Starting From Row Water To Storage Units In Erbil City of Iraq 2010</p> <p>9. A Preliminary Study of Algae in Two Nearby Water Bodies in Suliamaniyah 2008.</p> <p>10. Limnological study on Dilopa Spring and Kesnezan Impoundment. Hewlêr, Kurdistan Region of Iraq 2008</p> <p>11. An Ecological Study on Water to Some Thermal Springs In Koya-Erbil Provence, Iraq 2010.</p> <p>12. Limnology and Non-Diatom Phytoplankton Composition Of Dilope Spring And Kesnezan Impoundment, Hewler –Kurdistan Region Of Iraq.</p> <p>13. Awaz Bahrooz Mohammed, Siraj Muhammed Abdulla Goran, and Abhrajyoti Tarafdar. "Profiling of Seasonal Variation In and Cancer Risk Assessment of Benzo(a)pyrene and Heavy Metals In Drinking Water From Kirkuk City, Iraq." <i>Environmental science and pollution research</i>, v. 29 ,15 pp. 22203-22222. doi: 10.1007/s11356-021-17314-8</p> <p>•</p>
<p>9. Keywords</p>	<p>Environmental, Assessment</p>
<p>10. Course overview: This course will cover most important topics of Environmental Impact Assessment, which focus on components of the environment, and how human activities affect physical, chemical, biological and socio-economic of the subject area. The impact assessment and mitigation measures for evaluating and reducing its effects on the environment in addition to management and monitoring plan for ongoing the project in the way without huge effects of wastes (liquid, gas and solid) on the sensitive receptors. Monitoring program for projects should be proposed and manipulated practically. Legislation and law of Kurdistan region government should be explained to student for to be familiar with these laws.</p>	

11. Course objective:

In the course of E.I.A. the students learn to evaluate the importance of the subject in their daily moments and to live with.

Also to teach them scientific knowledge about E.I.A. in which the goals of EIA will be:

1-provide information for decision-making on the environmental consequences of proposed actions; and

2-Promote environmentally sound and sustainable development through the identification of appropriate enhancement and mitigation measures.

Also Students are encouraged to search for any other materials that may help improve their English language ability in reading, writing, listening and speaking.

12. Student's obligation

In this course, the students will be evaluated through two 2 exams. The student's obligation during the course is attendance in the class for two hours for studying the theory. At the end of the course, a site visit will be done to some industries and factories and then accordingly a report will be prepared and considered as an exam.

Exam Sample and Answers

University of Salahaddin- Erbil

Examination of
Environmental Impact
Assessment/Theory

Time: 1.30 hrs.

College of Science /

30 Marks

Department of Environmental Sciences
4th Class Students

2022- 2023

/ / 2023

Note/ Answer all questions

Q1/ One of the most important steps in EIA preparation is Impact Analysis. What are major issues in impact analysis for EIA preparation? What are tools that may be used for impact analysis? (5 mark)

Q2/ If you have a proposed location for refinery establishment, what are major steps in soil sampling program, how many samples should be collected, and main parameters that should be focused on for this project.

(5 mark)

Q3/ Define the following:

(5 mark)

1-EIA

2- PPE

3- Hazard assessment

4-Environmental Monitoring

5-Socio-Economic Issues

Q4/what are major Responsibilities of PPE Coordinator in a company?

(5 mark)

Q5/What are main benefits of monitoring program? Mention each one briefly.

(5 mark)

Q6/ Discus briefly climate and Air Quality in environmental baseline description.

(5 mark)

Best wishes

Dr. Siraj M.A. Goran

A

Answers For Environmental Impact assessment

2022-2023

A/1

→ Type	biophysical, social, health or economic
→ Nature	direct or indirect, cumulative, etc.

→ Magnitude or severity	high, moderate, low
→ Extent	local, regional, trans-boundary or global
→ Timing	immediate/long term
→ Duration	temporary/permanent
→ Uncertainty	low likelihood/high probability
→ Reversibility	reversible/irreversible
→ Significance*	unimportant/important

- checklists
- matrices
- networks
- overlays and geographical information systems (GIS)
- expert systems
- professional judgement

A2/10 soil samples should be collected

Auger, hand shovel, Jar, Gloves, plastic container, plastic bag, soil pH meter, Soil thermometer, cool box, first aid, GPS, safety cloth, safety shoes, hard hat, pen, notebook, camera, eye glass

pH, EC, TDS, hardness, Ca, Mg, Na, K, Cl, soil texture, TPH, cyanide, NO₃, heavy metals.

A3/

- 1-EIA is a systematic process to identify, predict and evaluate the environmental effects of proposed actions and projects on the environment.
- 2-personal protective equipment (PPE) are equipments used in workplace for protecting from hazards such as hard hat, safety cloth and shoes, eye glass
- 3-A hazard assessment is an evaluation of a work place, or work situation, as to the potential for hazards that an employee may encounter while performing the job.
- 4-Environmental monitoring is a tool for detecting improvements or degradation in the health of ecosystems
- 5-The distribution and characteristics of the human population, including such aspects as population trends and composition, traditional life styles, communities, employment, public facilities and housing. Economic, cultural and social setting of the region affected, including present and projected sources of revenue without the project. Information on industry, construction, government and support services, as well as direct resource use, such as fishing and farming, should be provided, including locations.

A4

- Perform the hazard assessment(s).
- Select appropriate PPE.
- Inform, fit, and train employees on PPE.
- Provide EHSS (Environmental health and safety services) with required documentation.
- Reassess when new hazards are introduced.
- Retrain employee if PPE is misused.

A5/

- ➔ Monitoring combined with enforcement ensures proper functioning of environmental protection measures (EPMs) prescribed for development projects or activities
- ➔ Monitoring allows the early identification of potentially significant effects (i.e., early trends which could become serious)
- ➔ Through assuring compliance in a cost-effective manner, monitoring contributes to optimize economic-environmental development benefits

13. Forms of teaching

Different forms of teaching are used during the course, like:

Different forms of teaching will be used to reach the objectives of the course: 'power point presentations for the head titles and definitions and summary of conclusions, classification of materials and any other illustrations, , furthermore students will be asked to prepare research, scientific reports and papers on selective topics and summarize articles contents published in English those articles which need to be from printed media or internet sites on condition must be from origin and scientific one. There will be classroom discussions and the lecture will give enough background to translate, solve, analyze, and evaluate problems sets, and different issues discussed throughout the course. To get the best of the course, it is suggested that attend classes as much as possible, read the required lectures, teacher's notes regularly as all of them are foundations for the course. Lecture's notes are for supporting and not for submitting the reading material including the handouts, try as much as possible to participate in classroom discussions, preparing the assignments given in the course. And there will be project visits to be close and attached with the projects and their impact in Kurdistan region.

- White board
- Projector (data show) used for presentation
- Quiz

14. Assessment scheme

The students are required to do more than one closed book exam at the mid of the semester besides other assignments including translations and scientific reports. Each examination will have 10% and 10% will be on the **quizzes** (which will achieve suddenly and the student will be ready in any moment in the lecture to do such examination), attendance, classroom activities; translations and research paper , all will be 40% .There will be a final exam at the end of year on 60% marks which will be the total of 40% theoretical. So that the final grade will be based upon the following criteria:

- Monthly theoretical exams: 10% +10%
- Classroom participation, and assignments 10%
- Scientific reports 10%
- The final annual effort will be 40%.

- Final exam: 60%
- Final mark will be 40% + 60% =100%

Constructive classroom participation, submitting assignments, and attending class will be evaluated by the lecturer over the semester and used in borderline cases to determine the final grade. Exams and assignments require analytical work and not just memorization of topics or articles.

15. Student learning outcome:

At the end of the semester, students should get enough information about the environmental impacts of human activities. The student should have capability to write a report for EIA and mechanisms of data collection and Gathering. At the end of the course, when they finish university they can work with international and local companies through preparing and reviewing reports and working in health safety environment as coordinator and monitor. In the last years many oil companies come to Kurdistan Region for oil exploration and production, in a wide areas along the region, so several environmentalist are followed these companies and others are work with the field survey where the resources are available in the region.

16. Course Reading List and References:

Required books:

- 1- Glasson , J., Therival, R. and Chadwick, A. (2nd ed.) 'Introduction to Environmental Impact Assessment' (1999). UCL Press. UK.
- 2- Sharma, J.P. (2nd ed.) 'Comprehensive Environmental Studies' (2005). Laxmi Pub. Ltd. Golden House Daryaganji, New Delhi-India.
- 3- Dave, D. and Katewa, S.S. ; 'Textbook of Environment & Ecology' (2009). Cengage learning India Pvt. Ltd.
- 4- Miller, JR, G.T. (1992). 'Living in the environment', (7th ed.) Wadsworth, Inc. Company, Belmont, California, USA.
- 5- Nebel, B.J. and R.T. Wright (1998). 'Environmental Science' (6th ed) Simon & Schuster / A Viacom Company New Jersey, USA. 698pp.
- 6- Morgan, M.D., J.M. Moran, and J.H. Wiersma. (1993). 'Environmental Science. ii-i Managing Physical Resources'. Wm, C. Brown Communication Inc. USA. 114pp.

17. The Topics:

In this section the lecturer shall write titles of all topics he/she is going to give during the term. This also includes a brief description of the objectives of each topic, date and time of the lecture

Each term should include not less than 16 weeks

Lecturer's name

Dr. Siraj Muhammed Abdulla
2 hour per week for theoretical lecture

<p>18. Topics</p> <p><u>A: Theory</u></p>	
<p>1ST 2nd and 3rd weeks; Introduction to Environmental Impact Assessment (EIA).</p> <p>Definitions; Environment, ecosystem, abiotic, biota, natural resources, resource, natural resource accounting, biophysical, biological diversity, fauna, flora, endemic, ecological processes, baseline studies, NEPA, (EIA), scoping, (ToR), screening, secondary impact, initial environmental evaluation/examination, cumulative effects assessment, transboundary impacts, strategic environmental assessment, environmental impact report/statement, State of the Environment reports, decision-maker, value judgment, social impact assessment, public involvement, stakeholders, health impact assessment, risk analysis, environmental management, environmental management plan, environmental management system, impact management plan, impact monitoring, mitigation, monitoring.</p> <p>EIA Definition: In many EIA systems, a broad definition of 'environment' is adopted. This can include effects on:</p> <ul style="list-style-type: none"> • human health and safety; • flora, fauna, ecosystems and biological diversity; • soil, water, air, climate and landscape; • use of land, natural resources and raw materials; • protected areas and designated sites of scientific, historical and cultural significance; • heritage, recreation and amenity assets; and • Livelihood, lifestyle and wellbeing of those affected by a proposal. <ul style="list-style-type: none"> • Judgment of Class-2 projects (Screening). • Procedure for the draft of the assessment method (Scoping) <p>4th week; The EIA System in different country</p> <p>5th week; The Environmental Impact Assessment Laws .</p> <p>6th week ;(1) Objective..(2) Projects subject to EIA.</p>	<p>Dr. Siraj Muhammed Abdulla 2hour per week for theoretical lecture</p>

7th week; List of projects subject to the Environmental Impact Assessment Law.

8th week ; The side who implement EIA.

9th week; Procedure of EIA.

10th week;

-Description of the Existing Environment

- Introduction
- Natural Environment
- Physical resources;1-Climate

11th week; 2- Ambient Air Quality

12th; Noise Levels and Traffics Density

13th; Surface and Ground Water

14th week; Soil Quality

15th Mitigation Measures

16 Impact assessment methodology

17th and 18th Monitoring Program

19th Site visits and Practical Trips to different Projects within the Community site of the Student

20th week ; How to write E.I.A. report.

Rest weeks; studying the legislations and the laws of different countries with comparable study.

Final week; the legislation of Kurdistan region.

20. Extra notes:

The course book lacks to the problems which affect the educational process. These problems include the large number of students in each stage, diminution of instruments, and absence of appropriate rooms for lecturers to develop themselves. Finally, about the department of geology

Ministry of Higher Education and Scientific research

absence of financial support to carry out scientific trips and field course in a typical situation.