


Government of Karnataka
Department of Technical Education
Board of Technical Examinations, Bangalore

	Course Title: ENVIRONMENTAL IMPACT ASSESSMENT		
	Credits (L:T:P) 4:0:0	Total Contact Hours: 52	Course Code: 15CE63F
	Type of Course: Lectures/ Self study	Credit : 4:0:0	Core/ Elective: Elective
CIE- 25 Marks		SEE – 100 Marks	

Pre – requisite: Knowledge of basic environmental aspects

Course Objectives:

- To study the importance of EIA
- To know the role of public in EIA studies
- Understand phenomena of impacts in the environment
- Know the impact quantification of various projects on the environment

Course Outcome:

On successful completion of the course, the students will be able to attain CO:

Course Outcome		CL	Linked PO	Teaching Hrs
CO1	Explicate the concept of EIA	R, U	1, 2, 5, 6, 7, 10	08
CO2	Identify the objectives and scope of EIA	R, U	1, 2, 5, 6, 7, 10	06
CO3	Illustrate the necessity of public participation in EIA studies	R, U	1, 2, 5, 6, 7, 10	06
CO4	Summarize the importance of Environmental Attributes	R, U, A	1, 2, 5, 6, 7, 10	10
C05	Explain the phenomena of Impacts on environment	R, U	1, 2, 5, 6, 7, 10	12
C06	Quantify impacts for various developmental projects	R, U, A	1, 2, 5, 6, 7, 10	10
Total Sessions				52

Legends: R – Remember, U – Understand, A - Apply

COURSE-PO ATTAINMENT MATRIX

Course	Programme Outcomes									
	1	2	3	4	5	6	7	8	9	10
ENVIRONMENTAL IMPACT ASSESSMENT	3	3	-	-	3	3	3	-	-	3

Level 3- Highly Addressed, Level 2-Moderately Addressed, Level 1-Low Addressed.

Method is to relate the level of PO with the number of hours devoted to the COs which address the given PO.
 If $\geq 40\%$ of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 3
 If 25 to 40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 2
 If 5 to 25% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 1
 If $< 5\%$ of classroom sessions addressing a particular PO, it is considered that PO is considered not-addressed.

COURSE CONTENT

Unit No	Unit Name	Hour	Questions to be set for (5marks) PART - A			Questions to be set for (10marks) PART - B			TOTAL marks for SEE	Marks weightage (%)
			R	U	A	R	U	A		
1	Introduction to EIA	08	1	1	-	1	-	-	20	13.79
2	Objectives and Scope of EIA	06	2	1	-	-	-	-	15	10.34
3	Public Participation in EIA	06	1	-	-	-	1	-	15	10.34
4	Environmental Attributes	10	1	-	1	-	1	1	30	20.68
5	Environmental Impact case studies	12	1	-	-	1	1	1	35	24.13
6	Impact quantification	10	-	-	-	1	1	1	30	20.68
	Total	52	09(45marks)			10(100 marks)			145	100.00
	Percentage (%)		67	23	10	30	50	20		

Legend - R: Remember, U: Understand, A: Apply, An: Analysis

DETAILED CONTENT:

UNIT I: INTRODUCTION TO EIA 08Hrs

Definition, Evaluation of EIA in INDIA, Rapid and Comprehensive EIA, EIA, EIS, FONSI and NDS. Need for EIA studies, Baseline data, Step-by-step procedure for conducting EIA, Advantages and Limitations of EIA, Hierarchy in EIA, Statutory requirements in EIA, MoEF guidelines in siting Developmental Projects.

UNIT II: OBJECTIVES AND SCOPE OF EIA 06Hrs

Contents of EIA, Methodologies and Evaluation Techniques of EIA, Selection for specific projects

UNIT III: PUBLIC PARTICIPATION IN EIA 06Hrs

Elements of Effective Public Participation, Benefits and Procedures, EMP and DMP, Environmental Information System, Environmental Monitoring Systems, Public information network.

UNIT IV: ENVIRONMENTAL ATTRIBUTES 10Hrs

Value functions, Environmental attributes - Construction project, Industrial project, Developmental projects - Construction and Operational Phase, Mitigation measures – On Air, Water, Land, Ecology and Socio-economic Environment.

UNIT V: ENVIRONMENTAL IMPACT CASE STUDIES 12Hrs

Case studies on Human impact on Himalayan Ecosystem, Urban solid waste management with reference to Hyderabad City, Irrigation impacts of Upper Thunga Project (UTP) at Shimoga, Impact on air quality due to cement making – A case study of ACC limited, Madhukkarai, Coimbatore, Bhopal Gas tragedy.

UNIT VI: IMPACT QUANTIFICATION 10Hrs

Impact quantification study on - Water resource Developmental projects, Hazardous waste disposal sites, Sanitary land filling, Mining projects, Thermal/Nuclear power plant and Pharmaceutical industries



TEXT BOOKS

- Environmental Impact Analysis, Urban & Stacey, Jain R.K.
- Environmental Impact Assessment, Mc Graw Hill Inc, L.W. Canter (1996)
- Environmental Impact Assessment and Management, Daya Publishing house, Hosetti B.B., Kumar A. (2014)

REFERENCES

- Guidelines for EIA of Developmental Projects, MoEF, GOI
- Environmental Quality management, south asian publishers pvt ltd., Bindu N. Lohani

LIST OF SOFTWARE/LEARNING WEBSITES

- download.nos.org/333courseE/24pdf
- www.fao.org/3/a-i2802e.pdf
- www-wds.worldbank.org
- www.euroasiapub.org

SUGGESTED LIST OF STUDENT ACTIVITIES

Note: the following activities or similar activities for assessing CIE (IA) for 5 marks (Any one)

1	Visit a near by industry and submit a report on screening process conducted.
2	Visit a construction site and submit a report on the possible constriction phase impacts on different attributes
3	Conduct a survey to a nearby residential complex/apartment and submit a report on green belt facility procedure followed (w.r.t. air and Noise attributes)
4	Visit nearby pollution control board(PCB) and submit a report on procedure followed to conduct public participation
5	Suggest suitable mitigation measures for urban solid waste management problems

6	Suggest suitable mitigation measures for human impact on natural ecosystem
----------	--

Course Delivery:

- The course will be delivered through lectures and Power point presentations/ Video
- Lecturers can prepare or download PPT's on different topics of EIA.

Model of RUBRICS for assessing student activity

Dimension	Scale					Students Score				
	1 Unsatisfactory	2 Developing	3 Satisfactory	4 Good	5 Exemplary	1	2	3	4	5
1	Descriptor	Descriptor	Descriptor	Descriptor	Descriptor					
2	Descriptor	Descriptor	Descriptor	Descriptor	Descriptor					
3	Descriptor	Descriptor	Descriptor	Descriptor	Descriptor					
4	Descriptor	Descriptor	Descriptor	Descriptor	Descriptor					
Grand Average/Total										

Note: Concerned faculty (Course coordinator) must devise appropriate rubrics/criteria for assessing Student activity for 5 marks

One activity or any one CO (course outcome) may be given to a group of FIVE students

**Example: MODEL OF RUBRICS / CRITERIA FOR ASSESSING STUDENT ACTIVITY-
Task given- Industrial visit and report writing**

Dimension	Scale					Students score (Five students)				
	1 Unsatisfactory	2 Developing	3 Satisfactory	4 Good	5 Exemplary	1	2	3	4	5
1.Organisation	Has not included relevant info	Has included few relevant info	Has included some relevant info	Has included many relevant info	Has included all relevant info needed	3				
2.Fulfill team's roles & duties	Does not perform any duties assigned	Performs very little duties	Performs partial duties	Performs nearly all duties	Performs all duties of assigned team roles	2				
3.Conclusion	Poor	Less Effective	Partially effective	Summarizes but not exact.	Most Effective	5				
4.Conventions	Frequent Error	More Error	Some Error	Occasional Error	No Error	4				
Total marks						14/4=3.5 ≈4				

Course Assessment and Evaluation Scheme:

	What		To whom	When/Where (Frequency in the course)	Max Marks	Evidence collected	Course outcomes
Direct Assessment	CIE	IA	Students	Three IA tests (Average of three tests will be computed)	20	Blue books	1,2,3,4,5,6
				Student activities	05	Report	1,2,4,6
	SEE	End Exam		End of the course	100	Answer scripts at BTE	1,2,3,4,5,6
Indirect Assessment	Student Feedback on course		Students	Middle of the course		Feedback forms	1,2,3 Delivery of course
	End of Course Survey			End of the course		Questionnaires	1,2,3,4,5,6 Effectiveness of Delivery of instructions & Assessment Methods

*CIE – Continuous Internal Evaluation *SEE – Semester End Examination

Note: I.A. test shall be conducted for 20 marks. Average marks of three tests shall be rounded off to the next higher digit.

Note to IA verifier: The following documents to be verified by CIE verifier at the end of semester

1. Blue books(20 marks)
2. Student suggested activities report for 5 marks
3. Student feedback on course regarding Effectiveness of Delivery of instructions & Assessment Methods.

FORMAT OF I A TEST QUESTION PAPER (CIE)

Test/Date and Time	Semester/year	Course/Course Code	Max Marks		
Ex: I test/6 th week of sem 10-11 Am	I/II SEM		20		
	Year:				
Name of Course coordinator :			Units: __ CO's: __		
Question no	Question	MARKS	CL	CO	PO
1					
2					
3					
4					

Note: Internal choice may be given in each CO at the same cognitive level (CL).

MODEL QUESTION PAPER (CIE)

Test/Date and Time	Semester/year	Course/Course Code	Max Marks				
Ex: I test/6 th week of sem 10-11 Am	III SEM	Environmental Impact Assessment	20				
	Year: 2015-16	Course code:15WT63F					
Name of Course coordinator :			Units:1,2 Co: 1,2				
Note: Answer all questions							
Question no	Question				CL	CO	PO
1	Define EIA, explain the importance of same				R	1	1,2
2	Brief out the procedure of Screening in EIA procedure				R, U	1	1,2
3	Bring out the merits and demerits of ADHOC Procedure OR Explain the OVERLAYS procedure for conducting EIA studies				U	2	1,2
4	Explain the BEES procedure for conducting EIA studies OR Bring out the criteria for Selection of specific projects in EIA studies				R, U	2	1,2

MODEL QUESTION PAPER (SEE)

Diploma in Civil engineering

VI Semester

Course title: ENVIRONMENTAL IMPACT ASSESSMENT

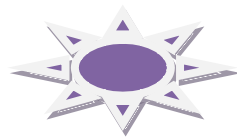
(Answer Any 6 questions from part A and Any 7 from Part B)

PART-A(Each questions carries 5 marks)

1. Define EIA, explain the importance of same
2. What are the advantages of conducting EIA
3. List out the methodologies adopted for conducting EIA studies
4. Bring out the merits and demerits of CHECKLISTS method
5. Explain the process evaluation techniques for conducting EIA studies
6. What are the objectives of Environmental monitoring systems
7. Name the various environmental attributes affected during the operational phase of a construction project
8. Suggest the various mitigation measures to control the effects on the environmental attributes due to a developmental project.
9. Brief out the effects on ecosystem due to Bhopal gas tragedy

PART-B(Each questions carries 10 marks)

1. (a) With a neat sketch explain the EIA process 06
(b) What are the limitations of conducting EIA studies 04
2. (a) Describe the procedure to be followed in conducting Public Participation program for an EIA study 06
(b) Distinguish between EMP and DMP 04.
3. Explain the various environmental attributes affected during the operational phase of a Industrial project 10
4. Suggest the various mitigation measures to control the effects on the environmental attributes due to a Industrial project 10
5. Brief out the case study of urbanization impact due to urban solid waste management with reference to Hyderabad City
6. Explain the mitigation measures taken to reduce human impact on Himalayan ecosystem
7. Discuss the mitigation measures taken to prevent irrigational impact due to UTP at Shimoga
8. Brief out the streams upon which impact quantification studies are carried out
9. Briefly quantify impacts due to hazardous waste disposal sites
10. Briefly quantify impacts due to nuclear power plant



MODEL QUESTION BANK

Diploma in Civil engineering

VI Semester

Course title: ENVIRONMENTAL IMPACT ASSESSMENT

UNIT I: INTRODUCTION TO EIA

CO1: Understand the concept of EIA

Remember	Understand	Application
<ol style="list-style-type: none">11. Define EIA, explain the importance of same12. Explain the relationship between EIA and EIS13. Explain the concept of EIS14. Explain the procedure adopted for evaluation of EIA in India15. Brief out the procedure of Screening in EIA procedure16. Explain the Scoping technique in EIA procedure17. With a neat sketch explain the EIA process18. Differentiate between rapid and comprehensive EIA19. Abbreviate the following:<ol style="list-style-type: none">a. EIAb. EISc. FONSId. NDSe. MoEF20. With a neat flow sheet bring out the relationship between EIA, EIS, FONSI and NDS21. Explain the need for EIA studies22. Write a brief note on Baseline data in EIA studies23. Explain the step-by-step procedure for conducting EIA24. With an example of construction project bring out the step by step procedure for conducting EIA for same25. What are the advantages of conducting EIA26. What are the limitations of conducting EIA studies27. Explain the Hierarchy in EIA studies28. What are the statutory requirements for conducting EIA studies29. Bring out the MoEF guidelines suggested in siting Developmental Projects		

UNIT II: OBJECTIVES AND SCOPE OF EIA

CO2: To know the objectives and scope of EIA

Remember	Understand	Application
<ol style="list-style-type: none">1. Explain the main objectives of conducting EIA studies2. Briefly explain the scope of EIA studies3. List out the methodologies adopted for conducting EIA studies4. Explain the ADHOC procedure for conducting EIA studies5. Bring out the merits and demerits of ADHOC Procedure6. Explain the CHECKLISTS method for conducting EIA studies7. Bring out the merits and demerits of CHECKLISTS method8. Explain the OVERLAYS procedure for conducting EIA studies		

9. Bring out the merits and demerits of OVERLAYS Procedure
10. Explain the MATRICES procedure for conducting EIA studies
11. Bring out the merits and demerits of MATRICES Procedure
12. Explain the NETWORKS procedure for conducting EIA studies
13. Bring out the merits and demerits of NETWORKS Procedure
14. Explain the BEES procedure for conducting EIA studies
15. Bring out the merits and demerits of BEES Procedure
16. Distinguish between CHECKLISTS and MATRICES
17. Distinguish between ADHOC and OVERLAYS
18. Explain the process evaluation techniques for conducting EIA studies
19. Bring out the criteria for Selection of specific projects in EIA studies

UNT III: PUBLIC PARTICIPATION IN EIA

CO3: Necessity of public participation in EIA studies

Remember	Understand	Application
<ol style="list-style-type: none"> 30. Describe the importance of PPP in EIA studies 31. Brief out the elements of Effective Public Participation Programme 32. Describe the procedure to be followed in conducting Public Participation program for an EIA study 33. What are the objectives of Environmental monitoring systems 34. Explain the importance of Environmental monitoring systems 35. List out the various elements that an Environmental monitoring systems include 36. Describe Environmental Management Plan 37. Explain briefly Disaster Management Plan 38. Distinguish between EMP and DMP 39. List out the Environmental Information system available for EIA studies 40. Explain Effects Module of Environmental Information system 41. Explain Documentary centre Module of Environmental Information system 42. Explain Public Module of Environmental Information system 43. Explain GIS Module of Environmental Information system 		

UNIT IV: ENVIRONMENTAL ATTRIBUTES

CO4: To know the importance of Environmental Attributes

Remember	Understand	Application
<ol style="list-style-type: none"> 44. Explain the importance of value function in EIA studies 45. Explain the various environmental attributes affected during the construction phase of a construction project 46. Explain the various environmental attributes affected during the operational phase of a construction project 47. Explain the various environmental attributes affected during the construction phase of a Industrial project 48. Explain the various environmental attributes affected during the operational phase of a Industrial project 49. Explain the various environmental attributes affected during the construction phase of a developmental project 50. Explain the various environmental attributes affected during the operational phase of a developmental project 		

51. Suggest the various mitigation measures to control the effects on the environmental attributes due to a construction project
52. Suggest the various mitigation measures to control the effects on the environmental attributes due to a Industrial project
53. Suggest the various mitigation measures to control the effects on the environmental attributes due to a developmental project

UNIT V: ENVIRONMENTAL IMPACT CASE STUDIES

CO5: To understand the phenomena of Impacts on environment

Remember	Application	Understand
<ol style="list-style-type: none"> 1. Brief out the case study of human impact on Himalayan ecosystems 2. Brief out the case study of urbanization impact due to urban solid waste management with reference to Hyderabad City 3. Brief out the case study of Irrigation impacts due to Upper Thunga Project (UTP) at Shimoga 4. Brief out the Impact on air quality due to cement making – A case study of ACC limited 5. Brief out the effects on ecosystem due to Bhopal gas tragedy 6. Explain the mitigation measures taken to reduce human impact on Himalayan ecosystem 7. Briefly describe the mitigation measures to prevent urbanization impact due to solid waste management 8. Discuss the mitigation measures taken to prevent irrigational impact due to UTP at Shimoga 9. Discuss the mitigation measures taken to prevent the industrial impact on air due to ACC limited 10. Brief out the mitigation measures taken to prevent impacts in future due to incidents similar to Bhopal gas tragedy. 		

UNIT VI: IMPACT QUANTIFICATION

CO6: Quantify impacts for various developmental projects

Remember	Understand	Application
<ol style="list-style-type: none"> 1. Explain the importance of impact quantification in EIA studies 2. Brief out the streams upon which impact quantification studies are carried out 3. Explain the importance of water resource developmental projects 4. Briefly quantify impacts due to water resource developmental project 5. Briefly quantify impacts due to hazardous waste disposal sites 6. Briefly quantify impacts due to sanitary land filling sites 7. Briefly quantify impacts due to Mining projects 8. Briefly quantify impacts due to Thermal power plant 9. Briefly quantify impacts due to nuclear power plant 10. Briefly quantify impacts due to Pharmaceutical industries 		