

MUZAFFARPUR INSTITUTE OF TECHNOLOGY, Muzaffarpur



**COURSE FILE
OF
Environmental Science
(011202)**



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VISION OF DEPARTMENT

To get recognized as prestigious civil engineering program at national and international level through continuous education, research and innovation.

MISSION OF DEPARTMENT

- To create the environment for innovative and smart ideas for generation of professionals to serve the nation and world with latest technologies in Civil Engineering.
- To develop intellectual professionals with skill for work in industry, academia and public sector organizations and entrepreneur with their technical capabilities to succeed in their fields.
- To build up competitiveness, leadership, moral, ethical and managerial skill.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

Graduates are expected to attain Program Educational Objectives within three to four years after the graduation. Following PEOs of Department of Civil Engineering have been laid down based on the needs of the programs constituencies:

PEO1: Contribute to the development of civil engineering projects being undertaken by Govt. and private or any other sector companies.

PEO2: Pursue higher education and contribute to teaching, research and development of civil engineering and related field.

PEO3: Successful career as an entrepreneur in civil engineering industry

PROGRAMME OUTCOMES (PO)

PO1	Engineering knowledge: An ability to apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to get the solution of the engineering problems.
PO2	Problem analysis: Ability to Identify, formulates, review research literature, and analyze complex engineering problems.
PO3	Design/development of solutions: Ability to design solutions for complex engineering problems by considering social, economical and environmental aspects.
PO4	Conduct investigations of complex problems: Use research-based knowledge to design, conduct analyse experiments to get valid conclusion.
PO5	Modern tool usage: ability to create, select, and apply appropriate techniques, and to model complex engineering activities with an understanding of the limitations.
PO6	The engineer and society: Ability to apply knowledge by considering social health, safety, legal and cultural issues.
PO7	Environment and sustainability: Understanding of the impact of the adopted engineering solutions in social and environmental contexts.
pPO8	Ethics: Understanding of the ethical issues of the civil engineering and applying ethical principles in engineering practices.
PO9	Individual and teamwork: Ability to work effectively as an individual or in team, as a member or as a leader.
PO10	Communication: An ability to communicate clearly and effectively through different modes of communication.

PO11	Project management and finance: Ability to handle project and to manage finance related issue
PO12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning.

COURSE OBJECTIVE AND COURSE OUTCOMES:

Institute/college Name	Muzaffarpur Insittute of Technology, Muzaffarpur
Program Name	B.E. (1 st year)
Course Code/course credits	011202
Course Name	ENVIORNMENTAL SCIENCE
Lecture/ Sessional (per week)	3/3
SEE duration	3 hours

Course objective:

To provide understanding of component of environment, their function ,quality, issues related to environment ,effect of quality degradation on human beings and their solutions.

Course outcomes (CO):

CO1: Understanding of issues related to environment and their impact on the human life.

CO2: understanding on the solutions related to the environmental problems.

CO3: understanding of different component of environment and their function and sustainable development.

MAPPING OF COs AND POs

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	--	---	3	2	--	2	2	--	3
CO2	3	2	--	--	--	3	3	--	3	2	--	3
CO3	3	---	--	--	--	3	2	--	--	3	--	3

Correlation level: 1- slight (Low) 2- moderate (Medium) 3-substantial (High)

COURSE SYLLABUS:

1. Sustaining Resources : Environmental Quality : Water & Air Pollution. Effects and control of air and Water pollution; Introduction to solid waste and its management. Pollution of groundwater. Surface water and soils. Noise pollution; Renewable and Nonrenewable energy source. **Lecture : 11**

2. Toxicological Chemistry and effects and risks of it on human health **Lecture : 6**

3. Environmental Chemical Analysis Lecture : 6

4. Humans and Sustainability, Ecology and Sustaining Biodiversity **Lecture : 7**

5. Policy and legislation for environmental protection. Current Environmental issues **Lecture 6**

6. Policy and legislation for environmental protection, Current Environmental Issues. **Lecture 6**

MUZAFFARPUR INSTITUTE OF TECHNOLOGY

B.Tech. 2nd (Second) Semester (2017 Batch) PROVISIONAL TIME TABLE WITH EFFECT FROM 12.02.2018

DAY	Branch	I (10-10.50AM)	II (10.50-11.40AM)	III (11.40-12.30PM)	IV (12.30-01.20PM)	V (01.50-2.40PM)	VI (2.40-3.30PM)	VII (3.30-4.20PM)
MON	Mech	ENV SC (AP) IT6		ENV SC LAB (AP+SH)				
	Elect							
	Civil							
	EC							
	IT							
	LT	ENV SC (AP) IT6		ENV SC LAB (AP+SH)				
	PHAR							
TUE	Mech							
	Elect							
	Civil					ENV SC LAB (AP+RS)		
	EC							
	IT							
	LT							
	PHAR							
WED	Mech	ENV SC (AP) IT6						
	Elect							
	Civil					ENV SC LAB (AP+RS)		
	EC							
	IT							
	LT	ENV SC (AP) IT6						
	PHAR							
THU	Mech			ENV SC LAB (AP+SH)				
	Elect							
	Civil							
	EC							
	IT							
	LT			ENV SC LAB (AP+SH)				
	PHAR							
FRI	Mech			ENV SC (AP) IT6				
	Elect							
	Civil	Gate	Gate					
	EC							
	IT			ENV SC (AP) IT6				
	LT							
	PHAR							
SAT	Mech							
	Elect							
	Civil							
	EC							
	IT							
	LT							
	PHAR							

STUDENT LIST:

S.No.	Roll No.	Name
1	17E01	SHIVANGI
2	17E02	SAURAV SINHA
3	17E03	SHIVAM DUBEY
4	17E04	KANNU PRIYA
5	17E06	SAURAV KUMAR
6	17E07	APARNA SINGH
7	17E08	VIDYA KUMARI
8	17E09	VIVEK KUMAR
9	17E10	ABHIJEET KUMAR
10	17E11	UTPAL KANT
11	17E12	NIRAJ KUMAR
12	17E13	KHUSHBOO ANAND
13	17E14	KANHAIYA KUMAR
14	17E15	RAJ KAMAL
15	17E16	SANDHYA KUMARI
16	17E17	VANDANA BHARTI
17	17E18	SATYA PRAKASH
18	17E19	NEHA SINGH
19	17E20	MOHAMMAD EHSANULLAH
20	17E21	DEPAK KUMAR
21	17E22	ABHINAV KISHORE
22	17E23	SINTU KUMAR
23	17E24	PRAGYA KUMARI
24	17E25	GAUTAM KUMAR
25	17E26	ASHUTOSH KUMAR

26	17E27	MEDHA
27	17E28	KUMAR ARYAN
28	17E29	SUMIT KUMAR
29	17E30	MASYOOD AHMAD
30	17E31	VANISHA SHARMA
31	17E32	NELSHAN RANI
32	17E33	SANDEEP KUMAR SINHA
33	17E34	PAVAN KUMAR
34	17E35	NAVIN PUSHKAR
35	17E36	ANAMIKA BHARTI
36	17E37	TAMANNA CHOUDHARY
37	17E38	ABHISHEK RAJ
38	17E39	PRAVEEN KUMAR SAFI
39	17E40	ANAMIKA KAUSHIK
40	17E41	RAVISHANKAR KUMAR
41	17E42	RAVI PRAKASH CHOUDHARY
42	17E43	BUNTY KUMAR PASWAN
43	17E44	PRIYA KUMARI
44	17E45	RAMBABU BAITHA
45	17E46	KUMAR ABHINEET
46	17E47	VIKASH KUMAR
47	17E48	ASHISH KUMAR
48	17E49	MOHIT KUMAR
49	17E50	AMAN RAJ
50	17E51	ROHIT KUMAR
51	17E52	PREM BHARTI
52	17E53	MITHUN KUMAR
53	17E54	SUSHIL KUMAR
54	17E55	GHANSHYAM KUMAR
55	17E56	ASHWINI KUMAR
56	17E57	RAHAT ARAFAT
57	17E58	MANISH KUMAR

58	17E59	SANTOSH KUMAR RAM
59	17E60	ABHIMANYU KUMAR SINGH
60	17E61	SWETA KUMARI
61	17E62	RAJSHEKHAR KUMAR GOKUL
62	17E63	NAVNEET NAYAN
63	17E64	AMIT KUMAR
64	16E47	HUBHAM KUMAR

Text Books :

1. Introduction to Environmental Engineering and Science, G.M. Masters. Pearson Education
2. Environmental Science. Miller, Thomson Press .
3. Environmental Science, Wright, Pearson Education.
4. Principles of Environmental SCIENCE, W.P. Cunningham, Tata McGraw Hill.
5. Environmental Chemistry, Sawyer and McCarty, McGraw Hill
6. Environmental Chemistry, Manahan Stanley E. Lewis Publishers.

Practical :

1. Case Analysis based on theory.
2. Determination of simple environmental parameters in laboratory.
3. Paper Presentation on current environmental issues.

64	16E47	SHUBHAM KUMAR
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Topic No.	Topic	No. of Lecture/lecture no.	Text book
1.	Sustaining resources	11	TB1, TB2, TB3
	Water & Air Pollution	1	
	Effects and control of air and Water pollution.	2-4	
	Introduction to solid waste and its management	5-6	
	Pollution of groundwater Surface water and soils.	7-9	
	Noise pollution.	10	
	Renewable and Nonrenewable energy source	11	
2.	Toxicological Chemistry	7	TB1, TB2, TB3
	Introduction	12	
	Chemical nature of toxicants	13-14	
	Toxic chemical in the environment	15	
	Effect of toxicant on humans	16	
	Impact of chemical on hormone reproductive health enzyme	17	

	Dose response relationship , Establishing public policy	18	
3	Environmental chemical analysis	6	TB1, TB2, TB3
	Sample collection and analysis of air, water and soil samples	19	
	Analysis of neutron activation, instrumentation and methodology of atomic absorption spectroscopy, plasma emission spectroscopy.	20-21	
	Principle and working of x-ray, IR, gas chromatography,HPLC.	22-24	
4	Humans and sustainability	7	TB1,TB2,TB3
	Biological hierarchy.	25	
	Structure and function of ecosystem, food chain, food webs, ecological pyramid.	26	
	Energy flow through water, carbon,nitogen,sulphur,phosphorous cycle.	27-28	
	Classification characteristic features of ecosystem	29	
	Ecology ,population, growth model,	30	
	Biodiversity itsimportance, scenario at global and international level, method of conservation	31	
5	Policy and legislation	6	TB1,TB2

	various environmental issues and method of impact assessment	32	
	Policies and legislation at international and national level.	33-34	
	Environment management	35	
	Importance of environmental education and educating women on environmental issues.	36-37	

DETAILS OF ASSIGNMENTS:

S.No.	Assignment	Topic No.
1	Assignment 1	1
2	Assignment 2	2
3	Assignment 3	3

ASSIGNMENT-1

- I> What is Greenhouse effect? Explain it.
- II> What is Ozone depletion? Explain it with chemical reaction.

ASSIGNMENT-2

- I> Write short notes on air pollution, causes and solution for air pollution control.
- II> Write short note on water pollution, causes and solution for water pollution control.

ASSIGNMENT-3

- I> What do you understand by endangered species? List the name of endangered species. Describe the major step to protect them.



MUZAFFARPUR INSTITUTE OF TECHNOLOGY, MUZAFFARPUR

B.Tech 2nd Semester Mid-Term Examination, 2018

Environmental Science (011X02)

Time: 2 hours

FullMarks 20

Instructions: (i) Attempt any four questions.
(ii) Question No. 1 is compulsory.

1. Chose the correct option of the following
- (a) Which of the following is a secondary pollutant?
- i. Carbon dioxide
 - ii. Nitrogen oxides
 - iii. Sulphur oxides
 - iv. Smog
- (b) which of the following method is not used for the removal of particulate matter
- (i) gravity setting
 - (ii) cyclone separators
 - (iii) electrostatic precipitation
 - (iv) catalytic incineration
- (c) which of the following water pollutant is the main cause of dental problem
- (i) Fluoride
 - (ii) Nitrites
 - (iii) cyanide
 - (iv) lead

(d) which of the following compound is used to find out chloride content in water

- (i) sodium hydroxide
- (ii) sulphuric acid
- (iii) sodium nitrate
- (iv) silver nitrate

(e) which of the gas is cause of London smog

- (i) carbon dioxides
- (ii) nitrogen oxides
- (iii) Sulphur oxides
- (iv) None of these

2. What is acid rain? What are the causes and their effect? Also write about the solution of acid rain.
3. Write short notes on the different methods for air pollution control.
4. What do you mean by alkalinity of water? Write short notes on the laboratory method for determination of alkalinity of water.
5. Write about the water pollution and their causes in brief.
6. How chlorofluorocarbon (CFCS) is cause for ozone depletion? Explain with suitable chemical equations.
7. Write a short note on soil pollution.

QUESTION BANK

Code : 011202

(2)

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2012

ENVIRONMENTAL SCIENCE

Time : 3 hours

Full Marks : 70

Instructions:

- (i) All questions carry equal marks.
- (ii) There are **NINE** questions in this paper.
- (iii) Attempt any **FIVE** questions.
- (iv) Question No. 1 is compulsory.

1. Choose the correct answer on any seven of the following :

~~(i)~~ The primary pollutant caused by incomplete combustion of organic matter is

- (i) ozone akubihar.com
- (ii) carbon monoxide
- (iii) sulphur dioxide
- (iv) None of the above

~~(i)~~ The specified standard under US Ambient Air Quality standard for SO₂, NO₂ and CO respectively are

- (i) 100 µg/m³, 10 mg/m³, 80 µg/m³
- (ii) 80 µg/m³, 100 µg/m³, 500 µg/m³
- (iii) 100 µg/m³, 80 µg/m³, 10 mg/m³

~~(i)~~ → ~~(i)~~ 80 µg/m³, 100 µg/m³, 10 mg/m³
(0.05ppm) (0.05ppm) (10³µg/m³)
~~(ii)~~ The depletion of ozone in the outer atmosphere may result in increased

- (i) heart attack cases
- ~~(ii)~~ skin cancer cases
- (iii) asthma cases

(iv) None of the above akubihar.com

~~(i)~~ The rain is generally termed as acidic if pH value of rain water falls below

- (i) 3
- (ii) 5
- ~~(iii)~~ 7
- (iv) 8 akubihar.com

12AK-1100/135

(Turn Over)

12AK-1100/135

(Continued)

B.Tech 1st Semester Exam., 2013

ENVIRONMENTAL SCIENCE

Time : 3 hours

Full Marks : 70

Instructions :

- (i) All questions carry equal marks.
- (ii) There are **NINE** questions in this paper.
- (iii) Attempt **FIVE** questions in all.
- (iv) Question No. 1 is compulsory.

1. Answer any seven questions :

- (a) List the names of two water-borne diseases caused due to bacteria.
- (b) Write the name of the cyclone which struck India in October 2013.
- (c) List the names of four indoor air pollutants.
- (d) What is the permissible limit of dissolved solids for drinking water?
- (e) Write the types of biodiversity.
- (f) Write the names of two equipments employed to control particulate matter emission from thermal power plant.

- (g) Write the name of water pollutant responsible for blue baby disease.
- (h) Give the examples of two omnivorous animals.
- (i) Write the common unit used to express noise level.
- (j) Write the air pollutant responsible for bronchitis. akubihar.com

2. (a) Explain the structure and function of ecosystem with a neat sketch.
- (b) Explain the values of biodiversity.
3. (a) Discuss the methods of solid waste management by sanitary landfilling and thermal means.
- (b) Explain in brief various disaster management measures during cyclone and earthquake.
4. What is global warming? Explain the effects of global warming. Also explain the measures to prevent it.
5. What do you understand by endangered species? List the names of endangered species and describe the major steps taken to protect them in India.

B.Tech. 2nd Semester Exam., 2014

ENVIRONMENTAL SCIENCE

Time : 3 hours

Full Marks : 70

Instructions:

- (i) The marks are indicated in the right-hand margin.
 (ii) There are **NINE** questions in this paper.
 (iii) Attempt **FIVE** questions in all.
 (iv) Question No. 1 is compulsory.

1. Answer any seven of the following as directed : $2 \times 7 = 14$

(a) Pollution due to mercury compounds in water causes — disease. (11)

Methylmercury (Fill in the blank)

(b) Itai-itai disease in Japan is caused due to pollution of — in water. (10)

Lead (Fill in the blank)

(c) The gases responsible for the greenhouse effect are —. (5)

CO_2, CH_4, C_2H_6 (Fill in the blank)

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(d) Give the characteristics of stratosphere.

(e) The gas which caused Bhopal Disaster is —. $MeHg$ isotope CH_3MgCl

(11) (Fill in the blank)

(f) A 50 ml sample of water contains 700 p.p.m. of dissolved oxygen. After 5 days the dissolved oxygen becomes 210 p.p.m. after the sample has been diluted to 100 ml. BOD of the sample is —.

(11) (Fill in the blank)

(g) The range of dissolved oxygen in drinking water is —. 4-6 ppm

(11) (Fill in the blank)

(h) Give two examples each of renewable and non-renewable energy sources.

(i) For removal of As^{+3} from drinking water, water is passed through porous material. The material is made of —.

(11) (Fill in the blank)

(j) The cyclone collector is used to remove —.

(11) (Fill in the blank)

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B.Tech 1st Semester Exam., 2015

ENVIRONMENTAL SCIENCE

Time : 3 hours

Full Marks : 70

Instructions :

- (i) The marks are indicated in the right-hand margin.
 (ii) There are **NINE** questions in this paper.
 (iii) Attempt **FIVE** questions in all.
 (iv) Question No. 1 is compulsory.

1. Choose the correct answer (any seven) :

2×7=14

- (a) The primary air pollutants are
 (i) sulphur dioxide and nitrogen oxide
 (ii) ozone and carbon monoxide
 (iii) sulphur dioxide and ozone
 (iv) nitrogen oxide and ozone
- (b) Electrostatic precipitator is used as pollution controller for the separation of
 (i) SO₂
 (ii) NO_x
 (iii) hydrocarbon
 (iv) particulate matter

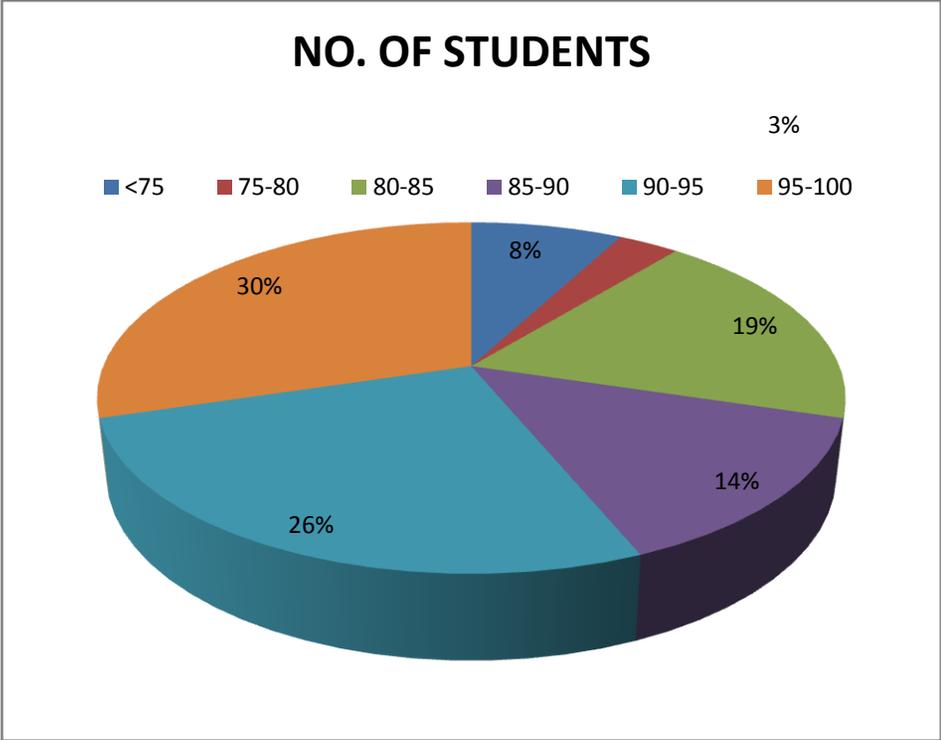
- (c) The most common cause of acidity in water is
 (i) CO₂
 (ii) O₂
 (iii) H₂
 (iv) N₂
- (d) The process in which chlorination is done beyond the breakpoint is
 (i) pre-chlorination
 (ii) post-chlorination
 (iii) super-chlorination
 (iv) breakpoint chlorination
- (e) The process of corrosion is enhanced by
 (i) air and moisture
 (ii) electrolytes in water
 (iii) metallic impurities and gases like CO₂ and SO₂
 (iv) All of the above
- (f) Pollutant is
 (i) undesirable foreign matter
 (ii) desirable foreign matter
 (iii) required foreign matter
 (iv) useful foreign matter

LIST OF THE EXPERIMENT

1. To determine pH of tap water AND SEWAGE
2. To determine alkalinity of tap water
3. Chloride content of tap water and sewage
4. Hardness of tap water and sewage
5. To determine D.O of tap water and sewage

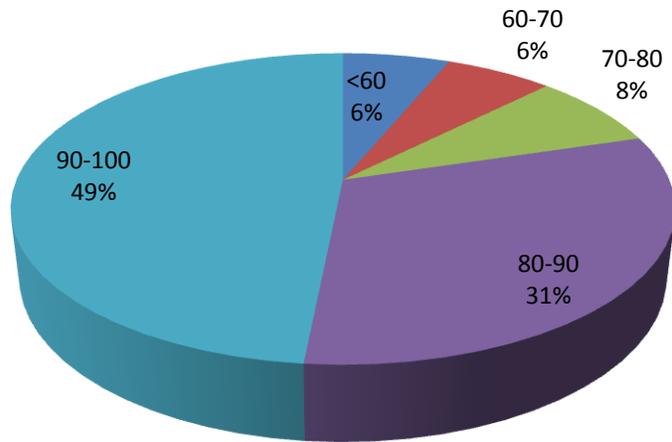
RESULT ANALYSIS

THEORY



PRACTICAL

NO. OF STUDENTS



COs	CT1	MSE	SEE	LAB	Assignment
CO1	-	Q1,Q2,Q4,Q5,Q6,Q7		E1-E5	A1
CO2	Q1	Q1, Q2,Q3		E1-E5	A2
CO3		Q1, Q6			A3

Quality Measurement Sheets

a. Course End Survey

ACADEMIC YEAR: 2018	SEM: 2ND	DATE: 01/05/2018
COURSE: B.Tech.	CLASS: ENVIORNMENTAL SCIENCE	FACULTY: Dr. AkashPriyadarsee, sushila Sharma, Rishi srivastva

Please evaluate on the following scale:

Excellent(E)	Good(G)	Average(A)	Poor(P)	No Comment(NC)
5	4	3	2	1

SNO	QUESTIONNAIRE	E	G	A	P	NC	Avg %
		5	4	3	2	1	
GENERAL OBJECTIVES:							
1	Did the course achieve its stated objectives?	5					100
2	Have you acquired the stated skills?	5					100
3	Whether the syllabus content is adequate to achieve the objectives?		4				80
4	Whether the instructor has helped you in acquiring the stated skills?			3			60
5	Whether the instructor has given real life applications of the course?		4				80
6	Whether tests, assignments, projects and grading were fair?		4				80
7	The instructional approach (es) used was (were) appropriate to the course.		4				80
8	The instructor motivated me to do my best work.		4				80
9	I gave my best effort in this course		4				80
10	To what extent you feel the course outcomes have been achieved.		4				80
Please provide written comments:							
a) What was the most effective part of this course							
Ecology and Biodiversity							

b) What are your suggestions, if any, for changes that would improve this course?
Syllabus needs to be modified.

c) Given all that you learned as a result of this course, what do you consider to be most important?
SUSTAINABLE DEVELOPMENT

d) Do you have any additional comments or clarifications to make regarding your responses to any particular survey item?
None

e) Do you have any additional comments or suggestions that go beyond issues addressed on this survey?
none

TEACHING EVALUATION

COLLEGE NAME

Department of Civil Engineering

Course Assessment

ACADEMIC YEAR: 2018	SEM:2ND	DATE:12/5/2018
COURSE:B.tech	CLASS: ENVIORNMENTAL SCIENCE	FACULTY: Dr.AkashPriyadarshee,Sushila Sharma,Rishi Srivastva

Assessment	Criteria Used	Attainment Level		Remarks
Direct (d)	Theory			
	External Marks	-	-	
	Internal Marks (Theory)	2.5/3	83%	
	Assignments	3	100%	
	Tutorials	N.A.	N.A.	
Indirect (id)	Course End Survey	4/5	80%	
Theory: Course Assessment (0.6 × d+ 0.4 × id)			81.8%	