Academic Course Description

BHARATH UNIVERSITY
Faculty of Engineering and Technology
Department of Civil Engineering

BCE067 ENVIRONMENTAL HEALTH ENGINEERING

Seventh Semester, 2017-18 (Odd Semester)

Course (catalog) description

This subject covers types of pollution and its impacts various methods and techniques of disposing and management of waste, various diseases that affect human beings and introduces the importance of sanitation processes.

Compulsory/Elective course : Compulsory for Civil students

Credit/ Contact hours : 3 credits / 45 hours

Course Coordinator : Dr.M.P.Chockalingam, Professor

Instructors :

Name of the instructor	Class handling	Office location	Office phone	Email (domain:@ bharathuniv.ac.in	Consultation
Dr.M.P.Chockalingam, Professor	Fourth year Civil	Civil Block			9.00 - 9.50 AM

Relationship to other courses:

Pre –requisites : BCE 061 Air and Noise Pollution

Assumed knowledge : BCE 061 Air and Noise Pollution

Following courses : Nil

Syllabus Contents

UNIT I **9**

Impact of Development and Water Pollution – Ecology and ecosystems Impact of development, land use and natural resource management, Cause and effects of environmental pollution.

UNIT II **9**

Natural Processes: Pollution due to industrial, agriculture and municipal wastes – Limitation of disposal of dilution. BOD considerations in streams. Water Pollution control legislation.

UNIT III **9**

Air and Noise Pollution and Control- Pollutants and their sources- Effect of pollution of human wealth, vegetation- Air pollution control legislation -noise pollution- sources and effects – Control measures.

UNIT IV **9**

Solid Wastes Management and Water Control Sources - Characteristics Quantities – Collection methods and disposal techniques - Sanitary -landfill -Incineration and pyrolysis – composting - water borne diseases – of mosquitoes, flies, rodents.
Rational control and naturalistic methods of control, uses and limitations of pesticides, engineering measures of water control.

UNIT V **9**

Food & Milk Sanitation : Relation of food to disease – principles of food sanitation – Sanitation of Kitchen in restaurants and other catering establishments – Quality changes in milk – Milk as carrier of infection – Pasteurization of milk – HTST and LTLT processes. Cattle shed sanitation.

Total No. of Periods: 45

Text Books:

1. Ehlws V.M. and E.W. Steel. Municipal and Rural Sanitation – McGraw Hill Co. Inc, New York, 1954

References:

1. Park J.E. and Park K.,"Text Book of Preventing and Social Medicine",M/s. Banarsidos, Bhanot, Jabalpur, 1980.
2. Stern A.C. *ed,* " Air Pollution Vol. I, II & III", Academic Press, New York, 1968
3. Cuniff P.E,"Environmental Noise Pollution", John Wiley & Sons, New York. 1977.

Computer usage: Nil

Professional component

General	-	0%
Basic Sciences	-	0%
Engineering sciences & Technical arts	-	0%
Professional subject	-	100%

Broad area: Ecology and ecosystems/ Food & Milk Sanitation/water borne diseases

Test Schedule

S. No.	Test	Tentative Date	Portions	Duration
1	Cycle Test-1	August 1st week	Session 1 to 14	2 Periods
2	Cycle Test-2	September 2nd week	Session 15 to 28	2 Periods
3	Model Test	October 1st week	Session 1 to 45	3 Hrs
4	University Examination	TBA	All sessions / Units	3 Hrs.

Mapping of Instructional Objectives with Program Outcome

This subject covers types of pollution and its impacts various methods and techniques of disposing and management of waste, various diseases that affect human beings and introduces the importance of sanitation processes. .	Correlates to program outcome		
	H	**M**	**L**
1. To learn about the various environmental pollution and the impacts of land use and overuse of natural resources	c	b	a
2 .To learn the various water acts and the sources of water pollution	b	c	e
3. To learn the various Air acts and the sources and the effects of Air and noise pollution.	b,d	k	
4. Insight into the solid waste management and various disposal techniques.	g	e	f
5.Insight into food sanitation and the effects of food borne diseases		e	

H: high correlation, M: medium correlation, L: low correlation

Draft Lecture Schedule

Session	Topics	Problem solving (Yes/No)	Text / Chapter
UNIT I			
1.	Impact of Development Projects	No	**[T1, R2]**
2.	Water Pollution	No	
3.	Ecology and ecosystems	No	
4.	Impact of development on Ecology and ecosystems	No	
5.	land use	No	
6.	natural resource management	No	
7.	Causes of environmental pollution	No	
8.	effects of environmental pollution	No	
9.	Air pollution	No	
UNIT II			
10.	Natural Processes.	NO	**[T1, & R3]**
11.	Pollution due to industrial wastes	No	
12.	Pollution due to agriculture wastes	No	
13.	Pollution due to municipal wastes	No	
14.	Self Purification of Streams	No	
15.	Limitation of disposal of dilution	No	
16.	BOD considerations in streams	No	
17.	Water Pollution control legislation	No	
18.	Limitation of disposal of dilution	No	
UNIT III			
19.	Air pollution	No	**[T1, & R3]**
20.	Noise Pollution	No	
21.	Pollutants and their sources	No	
22.	Effect of pollution on human health	No	
23.	Effect of pollution on vegetation	No	
24.	Control of Air pollution	No	
25.	Control of Noise pollution	No	
26.	sources and effects	No	

27.	Control measures.	No	
UNIT IV			
28.	Solid Wastes Management and Water Control Sources	No	
29.	Characteristics Quantities	No	
30.	Collection methods and disposal techniques	No	
31.	Sanitary -landfill	No	**[T1, & R3]**
32.	Incineration and pyrolysis	No	
33.	composting	No	
34.	water borne diseases	No	
35.	Control of mosquitoes, flies, rodents	No	
36.	Rational control and naturalistic methods of control	No	
37.	uses and limitations of pesticides, engineering measures of water control.	No	
UNIT V			
38.	Food & Milk Sanitation	No	
39.	Relation of food to disease	No	
40.	principles of food sanitation	No	
41.	Sanitation of Kitchen in restaurants and other catering establishments	No	**[T1, & R3]**
42.	Quality changes in milk	No	
43.	Milk as carrier of infection	No	
44.	Pasteurization of milk	No	
45.	HTST and LTLT processes, Cattle shed sanitation	No	

Teaching Strategies

The teaching in this course aims at establishing a good fundamental understanding of the areas covered using:

- Formal face-to-face lectures
- Tutorials, which allow for exercises in problem solving and allow time for students to resolve problems in understanding of lecture material.
- Laboratory sessions, which support the formal lecture material and also provide the student with practical construction, measurement and debugging skills.
- Small periodic quizzes, to enable you to assess your understanding of the concepts.

Evaluation Strategies

Cycle Test – I	-	5%
Cycle Test – II	-	5%
Model Test	-	5%
Attendance	-	10%
Assignment	-	5%
Final exam	-	70%

Prepared by: Dr.M.P.Chockalingam, Professor, Department of Civil **Dated :**

Addendum

ABET Outcomes expected of graduates of B.Tech / Civil / program by the time that they graduate:

a. An ability to apply knowledge of mathematics, science, and engineering
b. An ability to design and conduct experiments, as well as to analyze and interpret data
c. An ability to design a hardware and software system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
d. An ability to function on multidisciplinary teams
e. An ability to identify, formulate, and solve engineering problems
f. An understanding of professional and ethical responsibility
g. An ability to communicate effectively
h. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
i. A recognition of the need for, and an ability to engage in life-long learning
j. A knowledge of contemporary issues
k. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Program Educational Objectives

PEO1: PREPARATION

Civil Engineering graduates will have knowledge to apply the fundamental principles for a successful profession and/or for higher education in Civil Engineering based on mathematical, scientific and engineering principles, to solve realistic and field problems that arise in engineering and non engineering sectors

PEO2: CORE COMPETENCE

Civil Engineering graduates will adapt to the modern engineering tools and construction methods for planning, design, execution and maintenance of works with sustainable development in their profession.

PEO3: PROFESSIONALISM

Civil Engineering Graduates will exhibit professionalism, ethical attitude, communication and managerial skills, successful team work in various private and government organizations both at the national and international level in their profession and adapt to current trends with lifelong learning.

PEO4: SKILL

Civil Engineering graduates will be trained for developing soft skills such as proficiency in many languages, technical communication, verbal, logical, analytical, comprehension, team building, inter personal relationship, group discussion and leadership skill to become a better professional.

PEO5: ETHICS

Civil Engineering graduates will be installed with ethical feeling, encouraged to make decisions that are safe and environmentally-responsible and also innovative for societal improvement.

Course Teacher	Signature
Dr.M.P.Chockalingam, Professor	

Course Coordinator **HOD/CIVIL**