Academic Course Description

BHARATH UNIVERSITY
Faculty of Engineering and Technology
Department of Civil Engineering

BCE061 Air and Noise Pollution

Sixth Semester, 2016-17 (Even Semester)

Course (catalog) description

This subject covers the sources, characteristics and effects of air and noise pollution and the methods of controlling the same. The student is expected to know about source inventory and control mechanism

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	Fourth year Civil	Civil Block			9.00 - 9.50 AM

Relationship to other courses:

Pre –requisites : BCE 406 Environmental Studies

Assumed knowledge : BCE 406 Environmental Studies

Following courses : nil

Syllabus Contents

UNIT I INTRODUCTION **9**

Definition of clean air, nature, air pollutants, sources of air pollutants, effects of air pollution on man, animal, vegetation and properties.

UNIT II AMBIENT AIR QUALITY STANDARDS AND AIR QUALITY MONITORING **10**

Harmful concentration – geographical factors in air pollution – air pollution control legislation. Classification sampling; sampling techniques; monitoring atmospheric pollution.

UNIT III FLUID RESISTANCE TO PARTICLE MOTION **9**

Principles of removal of a gaseous constituent; adsorption and combustion; catalytic combustion of organic materials; catalytic oxidation and decomposition.

UNIT IV AIR POLLUTION AND CONTROL MEASURES **9**

Setting chambers; momentum separators, fibrous filters; electro static precipitators; bag houses centrifugal spray scrubbers; venture scrubbers; elementary principles of air pollution e-control techniques.

UNIT V NOISE POLLUTION **8**

Sound and noise; sources of noise pollution, environmental and industrial noise; effects of noise pollution: measures for prevention and control of noise; environmental and industrial noise; noise control legislation

TEXT BOOKS:

- Anjaneyulu D., "Air Pollution and Control Technologies", Allied Publishers, Mumbai, 2002

REFERENCES:

- Rao, C.S. Environmental Pollution Control Engineering, Wiley Eastern Ltd., New Delhi,1996.
- Rao M.N., and Rao H. V. N., Air Pollution Control, Tata-McGraw-Hill, New Delhi, 1996.
- Stern A.C. ed, " Air Pollution Vol. I, II & III", Academic Press, New York, 1968 Cunniff P.F, "Environmental Noise Pollution", John Wiley& Sons, New York. 1977.
- Docks H.M., "Environmental Pollution", John Wiley & Sons. New York 1981
- Chanlett T Emit,"Environmental Protection", McGraw Hill series in Water Resources and
- Environmental Engineering, New York. 1973. Patrick C.F,"Environemental noise pollution", John Wiley & Sons, 1977.

Computer usage:

Professional component

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

Broad area: sampling techniques/ air pollution control legislation

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 2nd 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 the sources, characteristics and effects of air and noise pollution and the methods of controlling the same. The student is expected to know about source inventory and control mechanism. • The emphasis in this course will be the monitoring and control of particulate and Gaseous pollutants, Minimization of the noise and noise pollution including technical measures, Codes, regulations, directives and standards about noise pollution.	Correlates to program outcome		
	H	**M**	**L**
1. To learn about the air pollutants, sources and its effects.	a,g	f	b
2. To have a clear understanding on the air quality standards and its techniques	c		i
3. To determine the fluid resistance for organic materials.	d,g,i	b	
4. To find the Properties of air pollution and its control measures.	a	h,i	
5. To learn about the effects and the sources of noise pollution.	d,i		

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

Draft Lecture Schedule

Session	Topics	Problem solving (Yes/No)	Text / Chapter
UNIT I INTRODUCTION TO AIR POLLUTION			
1.	Definition of clean air, nature,	No	[T1, R2]
2.	Air pollutants	No	
3.	sources of air pollutants	No	
4.	Mobile sources,stationary sources	No	
5.	Effects of air pollution on man	No	
6.	Effects of air pollution on animals	No	
7.	Effects of air pollution on Vegetation	No	
8.	Effects of air pollution on plants	No	
9.	Effects of air pollution on properties	No	
UNIT II AMBIENT AIR QUALITY STANDARDS AND AIR QUALITY MONITORING			
10.	Ambient Air Quality Standards	yes	[T1, & R3]
11.	Air Quality Monitoring	No	
12.	Harmful concentration	No	
13.	Meteorological factors in air pollution	No	
14.	Lapse rate,Inversion,Plume Behaviour	No	
15.	Geographical factors in air pollution	No	
16.	air pollution control legislation	No	
17.	Classification sampling	No	
18.	sampling techniques	No	
19.	monitoring atmospheric pollution.	No	
20.	Geographical factors in air pollution	No	
UNIT III FLUID RESISTANCE TO PARTICLE MOTION			
21.	Fluid Resistance To Particle Motion	No	**[T1, & R3]**
22.	Gaseous constituent	No	
23.	Principles of removal of gaseous constituent	No	
24.	Adsorption	No	
25.	Combustion	No	
26.	catalytic combustion	No	
27.	catalytic combustion of organic materials	No	
28.	catalytic oxidation	No	
29.	catalytic decomposition	No	
UNIT IV AIR POLLUTION AND CONTROL MEASURES			
30.	Air Pollution and Control Measures	No	**[T1, & R3]**
31.	Setting chambers;	No	
32.	momentum separators	No	
33.	fibrous filters	No	
34.	electro static precipitators	No	
35.	bag houses	No	

36.	centrifugal spray scrubbers	No	
37.	venture scrubbers	No	
38.	elementary principles of air pollution	No	
39.	e-control techniques	No	
UNIT V	**NOISE POLLUTION**		
40.	Noise Pollution	No	**[T1, & R3]**
41.	Sound and noise	No	
42.	sources of noise pollution	No	
43.	Environment and noise	No	
44.	effects of noise pollution	No	
45.	measures for prevention and control of noise	No	
46.	industrial noise	No	
47.	noise control legislation	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%
Assignment	-	5%
Attendance	-	10%
Final exam	-	70%

Prepared by: Ms.L.Maria Subashini , 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
Ms.A.Ambica	
Ms.L.MariaSubashini	

Course Coordinator **HOD/CIVIL**