Lecture Plan

Semester : VI (2008-2009)

Group : B Tech (Env. Engg.)

Subject : Water Quality and Treatment

(ES C 161 05)

Sl. No.	Topic	Expected Lecture hours
1	Water Quality Management and its problem	2
2	Water Treatment Processes: Theory and Application	2
3	Physico-chemical process of water purification	2
	• Sedimentation: Type I & Type II settling, design consideration	4
	• Coagulation and Flocculation – theory, dose, practice and design consideration	4
	• Filtration – Filter hydraulics, design and operation of Slow Sand, Rapid Sand, Pressure and Modern filters	4
4	Disinfaction – Chlorination and other methods	2
5	Water softening	2
6	Removal of dissolved substances – Aeration, Absorption, Reverse Osmosis, etc	2
	Total	**24**

Reference Books

1 Water Resource Engineering – Larry w Mays, Willey Text Books, 2000

2 Water Quality and Treatment Handbook – American Water Works association, MacGraw Hill Pub., 1999.

3 Water Supply and Sewerage – Steel and MaGhee, MacGraw Hill Pub., Latest Edition

4 Water Treatment Plant design – American society of Civil engineering, MacGraw Hill Pub., 1997.

5 Manual of Water Supply and Treatment (3rd Edition – Minister of Urban development, New delhi, 1991

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Lecture Plan

Semester : Winter (2008-2009)

Group : M. Tech (Env. Sc. & Engg.), II Sem

Subject : Design of Air Pollution Control Systems (ES E521 05) (Section B)

Sl. No.	Topic	Expected Lecture hours
1.	Air Pollution Control strategies	2
2.	Gravitational settling chamber : Principle, Design Aspects and Industrial Application	2
3.	ESP : Principle, Design Aspects and Industrial Application	6
4.	Fabric Filter : Principle, Design Aspects and Industrial Application	4
5.	Air Pollution Control in Mining Areas	4
6.	Vehicular Pollution and its control methodology	2
7.	Indoor Air Pollution Control	2
	Total	22

Reference Books

1. Environmental Pollution Control Engineering – by C.S.Rao, Wiley Eastern Ltd., 1994 or latest Edition.
2. Air Pollution Control Equipment – by H.Brauer and Y.B.G.Verma, Berlin Heidelberg, New York, 1981.
3. Internet Survey, National and International publications

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Lecture Plan

Semester : VI (2008-2009)

Group : B Tech (Env. Engg.)

Subject : Air Pollution Control (**ESC 161 02**)

(Section A)

Sl. No.	Topic	Expected Lecture hours
1	Review of Air Pollution Control strategies	2
2	Control of Particulate Matter	
	Gravity Settling Chamber: Principle, Design Aspects and Industrial Application	2
	ESP : Principle, Design Aspects and Industrial Application	6
	Fabric Filter : Principle, Design Aspects and Industrial Application	4
3	Air Pollution Control in Mining Areas: Dust Suppression, Dust Extraction and Dust Consolidation	4
4	Control of motor vehicle emissions	2
5	Indoor Air Pollution Control	2
6	Economics of pollution control	2
	Total	22

Reference Books

1 Environmental Pollution Control Engineering – by C.S.Rao, Wiley Eastern Ltd., 1994 or latest Edition.

2 Air Pollution Control Equipment – by H.Brauer and Y.B.G.Verma, Berlin Heidelberg, New York, 1981.

3 Internet Survey, National and International publications

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Lecture Plan

Semester: VIII (2008-09)

Group : B. Tech (Mining)

Subject: Surface Environment (ES C181 01)

Sl. No.	Topic	No of Lectures	
1	a) Environmental Issues in Mineral Industry – National & Global. b) Environmental Impacts of Mining	GS	6
2	Ecological Environment and its Management	AKP	3
3	Land Environment		
	a) Visual impacts, land scape analysis and planning	AKP	6
	b) Physical and Biological Reclamation, etc.		
4	a) Water Regime	GS	6
	b) Water Pollution and Management in Mining Areas		
5	a) Air Pollution – Sources and Impacts b) Air Quality Monitoring & Control	AKP	6
6	Noise Quality Monitoring & Control	AKP	6
6	Environmental Aspects of Blasting and Vibration	AKP	3
7	Socio-economic Impacts of Mining, Sustainable Development and concept of Carrying Capacity. Societal Environment and its Management	AKP	5
8	Environmental Administration in India, Preparation of EIA/EMP of Mining Projects	GS	4
	Total		45

Reference Books

1 Environmental Engineering – A design Approach , by A P Sincero & G A Sincero, Printice – Hall of India Pvt Ltd, 1999 Edition

2 Environmental Management in Mining Areas – by N C Saxena, Gurdeep Singh and Rekha Ghosh, Scientific Publishers (India), Jodhpur, 2002 Edition.

3 Mining Environment Management Manual - by N C Saxena et al., Scientific Publishers (India), 2005.

28/7/08

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PRACTICAL CLASS

Semester : VIII (2008-2009)

Group : B. Tech (Mining)

Subject : Surface Environment Practical

(ES C182 01)

Sl. No.	Practicals
A	**Air Pollution**
1	Demonstration of Air pollution monitoring instruments (HVS, RDS, RAM, GDS)
2	Determination of SPM and RPM in ambient air
3	Determination of SO_2 in ambient air
4	Determination of NOx in ambient air
5	Preparation of Wind Rose Diagrams
B	**Noise Pollution**
1	Demonstration of noise pollution monitoring equipment namely Modular Precision Sound Level Meter, Noise Dose Meter, etc.
2	Noise Monitoring and Analysis
C	**Water Pollution**
1	Demonstration of Sophisticated Equipments - AAS, UV-VIS Spectrophotometer, etc.
1	Determination of pH, Conductivity, Total Dissolved Solids (TDS), Hardness (Ca and Mg), Nitrate and Oil & Grease
2	Determination of Turbidity, DO, COD and BOD.
D	**Soil Pollution**
1	Soil sampling, pH, conductivity and organic carbon
2	Determination of Available Na, K
3	Determination of Field Capacity, Infiltration Rate, etc

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DEPARTMENT OF ENVIRONMENT SCIENCE AND ENGINEERING
INDIAN SCHOOL OF MINES, DHANBAD

B TECH (ENV ENGG), VI SEMESTER

WATER QUALITY AND TREATMENT PRACTICAL (ESC 162 05)

SL.NO.	LIST OF PRACTICAL
1.	Calibration and Standardization of different pH and Conductivity meters.
2.	Calibration and Standardization of Turbidity meter. Determination of Total Suspended Solids (TSS), Total Dissolved Solids (TDS) & establishment of their relationship.
3.	Determination of Total Hardness, Calcium Hardness & Magnesium Hardness and establishment of their relationship.
4.	Determination of Chlorine Demand, Break-point Chlorination and Free Residual Chlorine.
5.	Determination of DO and Nitrate.
6.	Determination of Fluoride and Sulphate.
7.	Determination of Optimum Coagulant Dose with the help of Jar-Test apparatus.
8.	Calibration and Standardization of AAS. Preparation of Standard Solutions & determination of heavy metals through AAS.

2/12/08

(S K Gupta)
Asstt Prof

A K Pal 2/12/08

(A K Pal)
Assoc Prof