JABALPUR ENGINEERING COLLEGE, JABALPUR (MP)
(An Autonomous Institute of Govt. of M.P.)
Affiliated to Rajiv Gandhi Technological University, Bhopal (MP)
Scheme of Study and Examination (w.e.f. July 2010)
M.E. III Sem. Branch : Civi Engg. Specialization : Environment Engineering

Course Code	Subject	Periods			EVALUATION SCHEME					Credits
					SESSIONAL EXAM					
		L	T	P	TA	CT	TOT	ESE	SUB TOTAL	
CE-145	Waste Water Treatment System Design	3	1	-	10	20	30	70	100	4
	Elective - III (Any One)									
CE-146A	Design of Water Treatment Systems									
CE-146B	Environmental Management	3	1	-	10	20	30	70	100	4
CE-146C	Recycling of Industrial Waste Water & Disposal									
(PRACTICAL/DRAWING/DESIGN)										
CE-147L	Seminar/ Project	-	-	4	100	-	100	-	100	4
CE148L	Industrial Training (4 weeks)	-	-	-	-	-	-	100	100	4
CE-149L	Preliminaries of Dissertation Presentation	-		4	40	-	40	60	100	4
	Total	**6**	**2**	**8**	**160**	**40**	**200**	**300**	**500**	**20**

T.A. Teachers Assessment, CT- Class Test, ESE - End Semester Examination, Total Marks 500
Total Periods : 16 Total Credits :20

NOTE : The students shall go on industrial training at the end of second semester and the evaluation shall be done at the end of third semester. The student has to present a report on the training and also has to face a viva voice examination infront of a panel headed by head of the department. The seminar /project shall be asigned by the supervisor

COURSE CONTENT & GRADE (w.e.f. July 2010)

Branch	Subject Title	Subject Code	Grade for End Sem		CGPA at the end of every even semester
			T	P	
	Waste Water Treatment System Design	CE-145	**Min "D"**	**Min "D"**	**5.0**

Waste Water Treatment System Design

UNIT- I : Design of facilities for physical and chemical treatment of waste water : Bar Racks and Coarse Screen, Grit Chambers, Chemical precipitation.

UNIT- II : Design of facilities for the Biological Treatment of waste water (Aerobic Suspended-Growth) :Activated-sludge Treatment, Aerated-Lagoon.

UNIT- III : Design of facilities for the Biological Treatment of waste water (Aerobic Attached-Growth): Trickling-Filter Treatment, Combined Aerobic Treatment Processes.

UNIT- IV : Design of facilities for the Stabilization Ponds, Design of Physical Facilities.

UNIT- V : Design of facilities for the Treatment and Disposal of Sludge: Concentration (Thickening), Stabilization , Final sludge And Solids Conveyance, Storage and Disposal.

Reference Books :

1. "Waste Water Engineering Treatment & Reuse" By- Metcalf & Eddy (Tata Mc-Graw Hill).

2." Water & Wastewater Technology" By- Mark J. Hammer (Prentice-Hall of India).

3. "Manual on Sewerage & Sewage Treatment" By- CPHEEO, Ministry of Urban Dev. New Delhi.

4. "Waste Water Treatment for Pollution Control" By- Soli J. Arceiwala.

COURSE CONTENT & GRADE (w.e.f. July 2010)

Branch	Subject Title	Subject Code	Grade for End Sem		CGPA at the end of every even semester
			T	P	
	DESIGN OF WATER TREATMENT SYSTEMS (Elective – III)	CE- 146A	**Min "D"**	**Min "D"**	**5.0**

Design of Water Treatment Systems

UNIT- I : Design of Pumping Stations and Water transmission Mains.

UNIT- II : Design of Sedimentation Tanks and Tube settler, Rapid mixer and Clarifiers

UNIT- III : Design of Slow sand and Rapid sand Filters

UNIT- IV : Design of different types of Disinfectors.

UNIT- V : Design of Distribution system, Service reservoir, Pipe Network.

Reference Books :

1. Physiochemical Processes for treatment of Water By – W.J. Weber
2. Environmental Engineering By – H.S. Peary, DR. Rowe & G. Tehobanoglous
3. Manual on Water Supply and Treatment published by CPHEEO, Ministry of Urban Development, GOI, New Delhi.
4. Water Supply & Sewerage By – Ernest W. Steel (Mc-Graw Hill Book Co.)

COURSE CONTENT & GRADE (w.e.f. July 2010)

Branch	Subject Title	Subject Code	Grade for End Sem		CGPA at the end of every even semester
			T	P	
	ENVIRONMENTAL MANAGEMENT (Elective – III)	CE- 146B	**Min "D"**	**Min "D"**	**5.0**

ENVIRONMEMTAL MANAGEMENT

UNIT – I : General : Global and Indian scenario, National Environmental Policy. Environment (protection) Act, 1986, Second Amendment Rules, 1992.

UNIT – II : Environmental organizations for planning and implementation sustainable development, Steps taken by these organizations.

UNIT – III : Preventive and reactive strategies for environmental pollution control, Environmental impact and risk assessment

UNIT – IV : Methodologies: Adhoc, Overlay, Checklist, Network, Matrix methods etc. Environmental management plan.

UNIT – V : Typical case studies of environmental impact assessment, Environmental impact statements, Environmental Audit, Environmental Legislation, Air, Water and Environmental acts.

Reference Books:

1. Rosencrannz, S. Divan, M.L.Noble, Environmental law and policy in India, cases, materials and statutes, tripathi pvt.Ltd. Bombay.
2. S.Mushraf, legal aspects of environmental pollution and its management, C.B.S. publishers, Delhi 1932.
3. R. K. Jain, L.V. Urban G.S.Stacey, H.E. Balbach, Environmental Assessment McGraw – Hill, Inc.N.Y.
4. Rao, J.G. and Wooten, Environmental Impact Analysis, Hanfbook, 1980.
5. Canter, L.W. Environmental Impact Assessments,-- N.Y. McGraw – hill book Co.1977.

COURSE CONTENT & GRADE (w.e.f. July 2010)

Branch	Subject Title	Subject Code	Grade for End Sem		CGPA at the end of every even semester
			T	P	
	RECYCLING OF INDUSTRIAL WASTE WATER AND DISPOSAL	CE- 146C	Min "D"	Min "D"	5.0

RECYCLING OF INDUSTRIAL WASTE WATER AND DISPOSAL

UNIT – I : General environmental impact assessment due to industrial water pollution, Assessment of pollution, Strength of waste – BOD, COD, TOC, etc, COD/BOD/ratio,

UNIT – II : Sampling and analysis of wastes, Determination of BOD rate constant, Standards for waste disposal for various method. Introduction of cleaner technologies, reuse, recycling and resource recovery.

UNIT – III : Industrial waste volume and strength reduction, equalization and proportioning of wastes, neutralization of waste.

UNIT – IV : General methods of treatment of industrial wastes. Treatment of specific industrial wastes: Textile, Tanning, Dairy, Fertilizer, Sugar, Brewery and distillery, Iron and Steel and Metal finishing, etc.

UNIT –V : Common Effluent Treatment Plant, Design of units. Anaerobic digestion of industrial wastewater, UASB, AFFFB, Hybrid reactors.

Reference Books :

1. Metcalf and eddy, wastewater engineering, treatment, disposal and reuse, Inc. Third edition McGraw hill 1991.
2. W.W. Eckenfelder, Industrial pollution control, McGraw Hill Int. Edition 1990.
3. Central pollution control board, India, comprehensive industry document series.
4. W.J. Weber, physicochemical processes for water quality control, John Wiley and Sons, 1972.
5. Nemerow, N.L. theories and practices of industrial waste treatment. New York : Addison wisely. Bess elivievre, E.B. the treatment of industrial wastes, McGraw Hill Book co. Culp R L et
6. Handbook of advanced wastewater treatment van no strand Reinhold publ. N.Y.

COURSE CONTENT & GRADE (w.e.f. July 2010)

Branch	Subject Title	Subject Code	Grade for End Sem		CGPA at the end of every even semester
			T	P	
	SEMINAR/ PROJECT	CE- 147L			5.0

SEMINAR/PROJECT

The student shall take up a small project under the supervision of a supervisor and shall complete the task. He has to present the report before a committee credit by H.O.D. and answer the queries

COURSE CONTENT & GRADE (w.e.f. July 2010)

Branch	Subject Title	Subject Code	Grade for End Sem		CGPA at the end of every even semester
			T	P	
	INDUSTRIAL TRAINING	CE- 148L	Min "D"	Min "D"	5.0

INDUSTRIAL TRAINING

The student shall go to an Industry at the end of Second Semester during summer and shall prepare a report on the Practical Training undergone there. He has to present the report at the time of practical examination of Third Semester.

COURSE CONTENT & GRADE (w.e.f. July 2010)

Branch	Subject Title	Subject Code	Grade for End Sem		CGPA at the end of every even semester
			T	P	
	PRELIMINARIES OF DISSERTATION PRESENTATION	CE- 149L	Min "D"	Min "D"	5.0

PRELIMINARIES OF DISSERTATION PRESENTATION

The student shall prepare a literature review of the dissertation work to be undertaken. He shall also prepare the scheme of dissertation.