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 : Civil Engg. Specialization : Geotechnical Engineering

Course Code	Subject	Periods			EVALUATION SCHEME					Credits
					SESSIONAL EXAM			ESE	SUB TOTAL	
		L	T	P	TA	CT	TOT			
CE-140	Ground Improvement Techniques	3	1	-	10	20	30	70	100	4
CE-141A	**Elective - III (Any One)**									
	Analysis & Design of Foundation Structures	3	1	-	10	20	30	70	100	4
CE-141B	Traffic Engineering									
CE-141C	FEM in Geotech. Engg.									
(PRACTICAL/DRAWING/DESIGN)										
CE-142L	Seminar/ Project	-	-	4	100	-	100	-	100	4
CE-143L	Industrial Training (4 weeks)	-	-	-	-	-	-	100	100	4
CE-144L	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	
	GROUND IMPROVEMENT TECHNIQUES	CE-140	Min "D"	Min "D"	5.0

GROUND IMPROVEMENT TECHNIQUES

Unit – I : Meaning & scope of term, fields of application, conventional methods. Compaction methods and other methods of ground-improvements, effect of compaction on soil properties. Methods for bearing capacity improvement. Methods for road-construction. Effect of water on ground improvement technique.

Unit – II : Ground improvement methods like pitting, pre-loading soil nailing vibro floatation, sand drains, stone columns, soil stabilization by the use of admixtures, grouting. Electrical and thermal methods. Use of fly ash. In situ techniques.

Unit – III : Reinforced Earth : Concept and philosophy, Materials for earth reinforcement. Geo-textiles, properties & uses. Jute as a ground-improving material.

Reference Books :

1. Basic & Applied soil Mechanics. Gopal Ranjan & ASR Rao, New age International (P) Ltd. Publishers, New Delhi.
2. Soil Mechanics and Foundation Engg. Vol –II VNS Murthy, Sri priya Technical Consultants, Bangalore.
3. CECR Journals
4. IGC Proceeding
5. Soil Mechanics by Alam Singh

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	
	ANALYSIS & DESIGN OF FOUNDATION STRUCTURES	CE-141A	Min "D"	Min "D"	5.0

ANALYSIS & DESIGN OF FOUNDATION STRUCTURES

Analysis and design by conventional methods, shallow foundation structures, single, combined footings and Mats, Pile Caps, eccentrically loaded foundations, foundations subjected to uplift and over turning, soil-structure interaction, sub grade reaction methods, closed form solutions, finite differences and matrix methods, elastic theory methods, application to various foundation problems, evaluation of relevant soil parameters, recent advances.

Reference Books :

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	
	TRAFFIC ENGINEERING	CE-141B	Min "D"	Min "D"	5.0

TRAFFIC ENGINEERING

Unit – I : Introduction : Traffic Engineering Administration and functions. The road user and vehicle

Unit – II : Traffic Survey and Studies : Spot speed study, travel time study traffic volume study, origin and destination study parking study, accident study.

Unit – III : Traffic Control and Regulations : Road markings, traffic signs, traffic signals, roadway delineator hazard marker, speed breaker, rumble strip, safety barriers, regulation of traffic.

Unit – IV : Street Lighting, TSM and Highway capacity :

Unit – V : Theory of Traffic flow : Scope definitions and basic diagram of traffic flow, car following queuing theory, vehicle arrivals headways and gaps.

Reference Books :

1. Traffic Engineering and Field Study by L.R. Kadiyali
2. Traffic Engineering by O. Finahrty
3. Traffic Engineering by D.K. Drew
4. Traffic Engineering by A.D. May

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	
	FEM IN GEOTECHNICAL ENGINEERING	CE-141C	Min "D"	Min "D"	5.0

FEM IN GEOTECHNICAL ENGINEERING

Unit – I : Basic concept, process of discretization, principles and laws cause and effect, Global and local coordinates, different interpolation.

Unit –II : Requirement for approximation function, Stress strain relation, Principle of minimum potential energy, integration.

Unit – III Potential energy approach, Direct stiffness method, Boundary conditions, Computer implementation.

Unit – IV : Stress distribution and deformation in isotropic and anisotropic soils, Built-up embankments, Seepage through porous media.

Unit – V : Sequence construction and excavation problems. Analysis of foundation, Dams underground structures and earth retaining structures. Analysis of flow through dams and foundation.

Reference Books :

Desai C.S. and Abel, J.F. (1987) "Introduction to FEM, A Numerical Method for Engineering."

Zienkiewicz, O.C. and ylor, R.L. "The finite Element Method" Fourth Ed. Meq Graw Hill Vol.1 (1989) and Vol @(1991)

Bathe, K. "Finite Element Procedures in Engineering Analysis," Prentice Hall. 1982. Current Literature.

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-142L			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-143L	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-144L	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