Civil Engineering Department

Semester - VIII

Teaching Scheme

Course Code	Course Name	Lecture hours	Tutorial hours	Practical hours	Credit
HS 4002	Engineering Ethics[$]	3	0	0	4
CE 4502	B.Tech. Project	0	0	0	8
	Open Elective – 3[#]	3	0	0	4
	Open Elective – 4[#]	3	0	0	4
	Total	**9**	**0**	**0**	**20**

 # - Students have to opt electives 3 and 4 from the following four subjects:

1. CE 4004 Reinforced Soil Structure (offered by Civil Dept.)
2. CE 4005 Bridge and Tunnel Engineering (offered by Civil Dept.)
3. Course to be offered by Electrical Dept.
4. Course to be offered by Electrical Dept.

$ - Syllabus to be proposed by HSS department

Civil Engineering Department

Semester : VIII

I	Course Code	**CE 4502**			
II	Course Title	**B.Tech. Project**			
III	Credit Structure	L	T	P	C
		0	0	0	8
IV	Prerequisite	—			
V	Instructor(s)	Respective student group supervisor(s)			
VI	Course Content	The B.Tech. project shall be the major project work focussing on developing practical and analytical skills of students by either working individually or preferably in a team on a problem that consist of any one or combination of various infrastructural aspects including experimentation, analysis and design of structures, geotechnical investigations, water supply distribution system, irrigation engineering and transportation systems.			
VII	Any other Remarks				

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I	Course Code	**CE 4004**			
II	Course Title	**Reinforced Soil Structure**			
III	Credit Structure	L	T	P	C
		3	0	0	4
IV	Prerequisite	Soil Mechanics, Foundation Engineering			
V	Instructor(s)	Dr.Trudeep N. Dave			
VI	Course Content	**1.Ground Anchor:** Types, forces on an anchor, design of ground anchor **2.Anchored Walls:** Design of anchored bulkhead Free earth support method, fixed earth support method, design of anchor **3.Reinforced Earth:** Introduction, background of reinforced earth, mechanism and concepts, Basis of reinforced earth wall design, sustainability approach **4.Reinforced Soil Retaining Walls:** Different types of walls like wrap-around walls, full height panel walls, discrete-facing panel walls, modular block walls, design methods as per Codes, construction methods for reinforced soil retainingwalls **5.Analysis of Reinforced Soil Structures using Computation Tools**			
VII	Text / References Books:	1. FHWA-IF-99-015 Technical Manual 2. Koernar, R. M. (2005) Designing with geosynthetics, 5th Edition, Prentice Hall, New Jersey,USA. 3. Shukla, S. K. and Yin, J. H. (2006) Fundamentals of Geosynthetic Engineering, Taylor and Francis, UK. 4. Published literature in the field of Soil Mechanics and Foundation Engineering			
VIII	Any other Remarks				

Civil Engineering Department

Semester : VIII

<table>
<tr><td>I</td><td>Course Code</td><td colspan="4">CE 4005</td></tr>
<tr><td>II</td><td>Course Title</td><td colspan="4">Bridge and Tunnel Engineering</td></tr>
<tr><td rowspan="2">III</td><td rowspan="2">Credit Structure</td><td>L</td><td>T</td><td>P</td><td>C</td></tr>
<tr><td>3</td><td>0</td><td>0</td><td>4</td></tr>
<tr><td>IV</td><td>Prerequisite</td><td colspan="4"></td></tr>
<tr><td>V</td><td>Instructor(s)</td><td colspan="4">Dr. Yogesh Shah and Dr. Jiten Shah</td></tr>
<tr><td>VI</td><td>Course Content</td><td colspan="4"><u>Bridge Engineering:</u>
Introduction:Importance of bridges, Requirement for ideal bridges,Site investigation, Components of bridge, waterway calculations, scours depth, afflux, and economic span.BridgeClassification:Classification of superstructures with respect to structural behaviour and material used, types of substructures, flooring joints, bridge bearings, movable bridges, temporary bridges.Bridge Foundations: Requirements of good foundation, Subsoil exploration, types of foundation, Caissons and cofferdams. Bridge bearings and design loads: Functions and types of bearings, Types of design loads, forces acting on different components of bridges. Construction methods: Methods of erection of various types of bridges, Superstructures andsubstructures.Maintenance:Bridge failures,Testing and strengthening of bridges.
<u>Tunnel Engineering:</u>
General aspects of Tunnelling: Tunnel and open-cut, classification of tunnels, shape & size of tunnels. Alignment of Tunnel: Investigation of tunnel sight, alignment, blasting and excavation.Shafts and Portals: Location & Classification of shafts, Construction of shafts, Portals, Twin tunnels Tunnelling techniques in Hard Rock and soft ground:Sequence of tunnelling in rock, methods of tunnelling in rock, methods of tunnelling in soft grounds, Shield tunnelling. Tunnel lining: Need for lining, lining material and procedure.Miscellaneous topics: Lighting, Ventilation and dust control, Drainage system, safety in tunnel construction.</td></tr>
<tr><td>VII</td><td>Text / References Books:</td><td colspan="4">1. Bernhard Maidl, Markus Thewes, Ulrich Maidl, Handbook of Tunnel Engineering, First Edition, Wiley & sons.
2. Kuesel, Thomas R., King, Elwyn H., Bickel, John O, Tunnel Engineering Handbook, Springer.
3. S.P. Bindra, Principles and Practice of Bridge Engineering, Dhanpat Rai& Sons, New Delhi
4. D.J. Victor, Essential of Bridge Engineering, Oxford & IBH Pub. Co. Ltd. Mumbai
5. Rangwala, Railway, Bridge and Tunnel Engineering (2nd Edition), Charotar Publishing House.
6. J.A.L. Waddell, Bridge Engineering, John Wiley & Sons.
7. S.C. Saxena, Tunnel Engineering, Dhanpat Rai& Sons, New Delhi.</td></tr>
<tr><td>VIII</td><td>Any other Remarks</td><td colspan="4"></td></tr>
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