

GOPALAN COLLEGE OF ENGINEERING AND MANAGEMENT

Department of Civil Engineering

Academic Year: **2016-17**

Semester: **EVEN**

COURSE PLAN

Semester: **IV**

Subject Code& Name: **15CV46 & Advanced Surveying**

Name of Subject Teacher: **VIJAYA BHARATHI**

Name of Subject Expert (Reviewer): **CHANDAN M R**

For the Period: From: 06-02-17 to 19-05-17

Details of Book to be referred:

Text Books	<p>T1. “Surveying Vol.2”, B.C. Punmia, Laxmi Publications Pvt. Ltd., New Delhi.</p> <p>T2. “Surveying and Levelling Part 2”, Kanetkar T P and S V Kulkarni, Pune Vidyarthi Griha Prakashan.</p> <p>T3. “Surveying Vol. 1” K.R. Arora, Standard Book House, New Delhi.</p> <p>T4. “Global Positioning System”, Sateesh Gopi, Tata McGraw Hill Publishing Co. Ltd. New Delhi.</p>
Reference Books	<p>R1 “Surveying Vol.I & II”, S.K. Duggal, Tata McGraw Hill Publishing Co. Ltd. New Delhi.</p> <p>R2. “Surveying and Levelling”, R Subramanian, Second edition, Oxford University Press, New Delhi.</p> <p>R3. “Plane and Geodetic Surveying Vol1 and Vol2”, David Clerk, CBS publishers.</p> <p>R4. “Remote Sensing and GIS, B Bhatia”, Oxford University Press, New Delhi.</p> <p>R5. “Remote sensing and Image interpretation”, T.M Lillesand, R.W Kiefer, and J.W Chipman, 5th edition, John Wiley and Sons India</p>

Lecture NO	Topic Planned	Practical Applications & Brief objectives	Book referred with Pg No.	Planned Date	Executed Date	Deviation Reasons thereof	How Made Good / Reciprocate arrangement	Remarks by HOD
1.	Module-1: Curve Surveying: Introduction	<p>Objective: To know about the types of curves and to know the elements of each curves.</p> <p>Application: To design the different types of curves used for railways and highways.</p> <p>OUTCOME: Understand the different types of curves and its practical application.</p>	T1: 1	06.02.17				
2.	Curves – Necessity		T1: 1	06.02.17				
3.	Types, Simple curves		T1: 2	10.02.17				
4.	Elements, Designation of curves		T1: 3	13.02.17				
5.	Setting out simple curves by linear methods		T1: 7	13.02.17				
6.	Numerical problems on offsets from long chord		T1: 20	20.02.17				
7.	Numerical problems on chord produced method		T1: 21	20.02.17				
8.	Setting out curves by Rankines deflection angle method		T1: 13	21.02.17				
9.	Numerical on Rankines deflection angle method		T1: 22	23.02.17				
10.	Compound curves Elements		T1: 47	27.02.17				
11.	Design of compound curves. Setting out of compound curves		T1: 51	27.02.17				
12.	Numerical		T1: 52	28.02.17				
13.	Reverse curve between two parallel straights		T1: 62	02.03.17				
14.	Numerical on equal radius and unequal radius		T1: 63	03.03.17				
15.	Transition curves Characteristics		T1: 81	06.03.17				

16.	Numerical problems on Length of Transition curve		T1: 100	06.03.17				
17.	Vertical curves –Types		T1: 110	06.03.17				
18.	Revision / unit test			07.03.17				
19.	Module-2: Geodetic Surveying and Theory of Errors: Geodetic Surveying	<p>Objective: To know about the triangulation systems and the errors occurred during the field work and triangulation</p> <p>Application: Selecting and marking the stations for triangulation and to reduce the errors.</p> <p>OUTCOME: Understand the types of errors and to eliminate it and to find the distances using triangulation</p>	T1: 213	13.03.17				
20.	Principle and Classification of triangulation system		T1: 214	13.03.17				
21.	Selection of base line and stations		T1: 225	14.03.17				
22.	Orders of triangulation		T1: 214	16.03.17				
23.	Triangulation figures		T1: 215	17.03.17				
24.	Reduction to Centre		T1: 218	17.03.17				
25.	Selection and marking of stations		T1: 226	20.03.17				
26.	Theory of Errors: Introduction		T1: 275	20.03.17				
27.	Types of errors, definitions		T1: 276	21.03.17				
28.	Laws of accidental errors		T1: 277	23.03.17				
29.	Laws of weights, theory of least squares		T1: 279	27.03.17				
30.	Rules for giving weights and distribution of errors to the field observations		T1: 281	27.03.17				
31.	Determination of the most probable values of quantities.		T1: 283	28.03.17				
32.	Revision / unit test				30.03.17			

33.	Module -3: Introduction to Field Astronomy	<p>Objective: To know about the celestial bodies and about the sun, stars and moons.</p> <p>Application: Helps to know the distance of the stars and sun from the earth from different locations.</p> <p>Outcome: Will able to find the distances of the celestial bodies.</p>	T1: 383	31.03.17					
34.	Earth, celestial sphere		T1: 383	03.04.17					
35.	Earth and celestial coordinate systems		T1: 386	03.04.17					
36.	Spherical triangle		T1: 393	04.04.17					
37.	Astronomical triangle		T1: 396	06.04.17					
38.	Napier's rule		T1: 394	07.04.17					
39.	Numerical on celestial coordinate systems		T1: 402	07.04.17					
40.	Numerical on celestial coordinate systems		T1: 404	10.04.17					
41.	Numerical on astronomical triangle		T1: 405	10.04.17					
42.	Numerical on Napier's rule		T1: 407	11.04.17					
43.	Revision / unit test			13.04.17					
44.	Module -4: Aerial Photogrammetry Introduction: Uses, Aerial photographs		<p>Objective: To know about topography of the soil surface from aerial view</p> <p>Application: Helps to know the gradient of the ground surface which helps to do survey and construction of</p>	T1: 523	20.04.17				
45.	Definitions			T1: 526	21.04.17				
46.	Scale of vertical and tilted photograph	T1: 529		21.04.17					
47.	Simple problems	T1: 534		24.04.17					
48.	Ground Co-ordinates	T1: 532		24.04.17					
49.	simple problems	T1: 536		25.04.17					
50.	Relief Displacements Derivation	T1: 546		27.04.17					

51.	Ground control	roads etc Outcome: Will be able to find out the position of objects easily and can calculate distance , gradients very easily.	T1: 569	28.04.17				
52.	Procedure of aerial survey		T1: 567	28.04.17				
53.	overlaps and mosaics		T1: 561	02.05.17				
54.	Stereoscopes, Derivation		T1: 580	04.05.17				
55.	Parallax (Derivation)		T1: 578	05.05.17				
56.	Revision / unit test			05.05.17				
57.	Module -5: Modern Surveying Instruments Introduction	Objective: To know the advanced method of surveying by using modern survey instruments Application: Helps to do surveying work accurately and more easily . cost of surveying will be reduced , survey work will be completing within given span of time Outcome: Will be able to find out the position of objects easily, using modern instruments will be known	T1: 601	08.05.17				
58.	Electromagnetic spectrum, Electromagnetic distance measurement		T1: 626, 603	08.05.17				
59.	Total station, Lidar scanners for topographical survey.		T1: 618	09.05.17				
60.	Remote Sensing: Introduction, Principles of energy interaction in atmosphere and earth surface features		T1: 623	15.05.17				
61.	Image interpretation techniques, visual interpretation.		T1: 625	15.05.17				
62.	Digital image processing, Global Positioning system		T1: 631	16.05.17				
63.	Geographical Information System: Definition of GIS, Key Components of GIS		NPTEL	18.05.17				
64.	Functions of GIS, Spatial data, spatial information system		NPTEL	19.05.17				

65.	Geospatial analysis, Integration of Remote sensing and GIS		NPTEL	19.05.17				
66.	Applications in Civil Engineering (transportation, town planning).		NPTEL	22.05.17				
67.	Revision / unit test			22.05.17				

Prepared By: Vijaya Bharathi
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