

# 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:

<b>Text Books</b>	<p><b>T1.</b> “Surveying Vol.2”, B.C. Punmia, Laxmi Publications Pvt. Ltd., New Delhi.</p> <p><b>T2.</b> “Surveying and Levelling Part 2”, Kanetkar T P and S V Kulkarni, Pune Vidyarthi Griha Prakashan.</p> <p><b>T3.</b> “Surveying Vol. 1” K.R. Arora, Standard Book House, New Delhi.</p> <p><b>T4.</b> “Global Positioning System”, Sateesh Gopi, Tata McGraw Hill Publishing Co. Ltd. New Delhi.</p>
<b>Reference Books</b>	<p><b>R1</b> “Surveying Vol.I &amp; II”, S.K. Duggal, Tata McGraw Hill Publishing Co. Ltd. New Delhi.</p> <p><b>R2.</b> “Surveying and Levelling”, R Subramanian, Second edition, Oxford University Press, New Delhi.</p> <p><b>R3.</b> “Plane and Geodetic Surveying Vol1 and Vol2”, David Clerk, CBS publishers.</p> <p><b>R4.</b> “Remote Sensing and GIS, B Bhatia”, Oxford University Press, New Delhi.</p> <p><b>R5.</b> “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.	<b>Module-1: Curve Surveying:</b> Introduction	<p><b>Objective:</b> To know about the types of curves and to know the elements of each curves.</p> <p><b>Application:</b> To design the different types of curves used for railways and highways.</p> <p><b>OUTCOME:</b> 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		<b>T1: 100</b>	06.03.17				
17.	Vertical curves –Types		<b>T1: 110</b>	06.03.17				
18.	<b>Revision / unit test</b>			07.03.17				
19.	<b>Module-2: Geodetic Surveying and Theory of Errors: Geodetic Surveying</b>	<p><b>Objective:</b> To know about the triangulation systems and the errors occurred during the field work and triangulation</p> <p><b>Application:</b> Selecting and marking the stations for triangulation and to reduce the errors.</p> <p><b>OUTCOME:</b> Understand the types of errors and to eliminate it and to find the distances using triangulation</p>	<b>T1: 213</b>	13.03.17				
20.	Principle and Classification of triangulation system		<b>T1: 214</b>	13.03.17				
21.	Selection of base line and stations		<b>T1: 225</b>	14.03.17				
22.	Orders of triangulation		<b>T1: 214</b>	16.03.17				
23.	Triangulation figures		<b>T1: 215</b>	17.03.17				
24.	Reduction to Centre		<b>T1: 218</b>	17.03.17				
25.	Selection and marking of stations		<b>T1: 226</b>	20.03.17				
26.	<b>Theory of Errors:</b> Introduction		<b>T1: 275</b>	20.03.17				
27.	Types of errors, definitions		<b>T1: 276</b>	21.03.17				
28.	Laws of accidental errors		<b>T1: 277</b>	23.03.17				
29.	Laws of weights, theory of least squares		<b>T1: 279</b>	27.03.17				
30.	Rules for giving weights and distribution of errors to the field observations		<b>T1: 281</b>	27.03.17				
31.	Determination of the most probable values of quantities.		<b>T1: 283</b>	28.03.17				
32.	<b>Revision / unit test</b>				30.03.17			

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

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

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

Prepared By: Vijaya Bharathi  
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Reviewed by: Chandan  
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Approved by: Prabhakar  
(HOD)

Approved by: A A Powly Thomas  
(Principal/ Acad. Co)

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