

**Lesson Plan- CE1008- Engineering surveying**  
**Academic year 2015-16**  
**(Semester commencing in June 2015)**

Instructional objectives no.	Instructional objectives (IO)
1.	To measure the land area by chaining, compass and plane table
2.	To measure the elevation of points using dumpy level
3.	To measure the height and distance by theodolite
4.	To know about the application of tacheometric surveying
5.	To know about the curves, contouring and setting out works for construction purposes

**Student outcomes**

Student outcome number	Student outcome (SO)
a	An ability to apply knowledge of science, mathematics and engineering
e	An ability to identify, formulate, and solve engineering problems.
j	A knowledge of contemporary issues

**Mapping of Instructional Objectives (IOs) with Student Outcomes (SOs)**  
**CE1008 Engineering Surveying**

Instructional objectives	Student Outcomes		
	a	e	j
1.To measure the land area by chaining, compass and plane table	X	X	
2.To measure the elevation of points using dumpy level	X	X	
3.To measure the height and distance by theodolite	X	X	
4.To know about the application of tacheometric surveying	X	X	X
5.To know about the curves, contouring and setting out works for construction purposes	X	X	X

CE1008	Engineering surveying	Lecture Hours (L)	Tutorial Hours (T)	Practical Hours (P)	Credits (C)
		3	0	0	3
	Prerequisites	Nil			

**Lesson Plan – 2015-16**

**Revision: 0 dated 7/07/2015**

Lecture No.	Topic	No. of hours	IOs	SO	Reference
1.	Introduction - overview of syllabus	1	1,2,3,4,5	a,e,j	1-9
<b>UNIT I - CHAIN, COMPASS AND PLANE TABLE SURVEYING</b>					
2.	Introduction – Definition – Principles – Classification	1	1	a,e	1,2,4,6
3.	Field and office work – Conventional signs – Ranging and Chaining – Reciprocal ranging – Setting perpendiculars Well-conditioned triangles	2	1	a,e	1,2,4,6
		1	1		

Lecture No.	Topic	No. of hours	IOs	SO	Reference
4.	Prismatic compass – Surveyor’s compass – Bearing systems and conversions	2	1	a,e	1,2,4,6
5.	Local attraction – Magnetic declination – Dip	1	1	a,e	1,2,4,6
6.	Traversing – Plotting – Adjustment of error – Plane table instruments and accessories – Merits and demerits – Methods - Radiation	2	1	a, e,j	1,2,4,6
7.	Intersection – Resection – Traversing	2	1	a,e	1,2,4,6
<b>UNIT II – LEVELLING</b>					
8.	Level line – Horizontal line – Levels and staves – Spirit level – Sensitiveness – Bench marks	2	1,2	a,e	1,2,4,6
9.	Shape factor for circular, rectangular, triangle and diamond -shaped sections	2	1,2	a,e,j	1,2,4,6
10.	Temporary and permanent adjustments – Fly and check levelling – Booking – Reduction	2	1,2	a,e,j	1,2,4,6
11.	Curvature and Refraction – Reciprocal levelling – Longitudinal and cross sections – Plotting	2	1,2	a,e,j	1,2,4,6
<b>Cycle Test -I</b>					
<b>UNIT III - THEODOLITE SURVEYING</b>					
12.	Theodolite – Vernier and Microptic – Description and uses – Temporary and permanent adjustments of Vernier transit	4	3	a,j	2,3,4,6,8,9
13.	Horizontal angles – Heights and distances – Traversing – Closing error and distribution – Trigonometric levelling	4	3	a.e	2,3,4,6,8,9
<b>UNIT IV - TACHEOMETRIC SURVEYING</b>					
14.	Tacheometric systems – Tangential, stadia and subtense methods, stadia systems	3	4	a,e	2,3,4
15.	Horizontal and inclined sights – Vertical and normal staff – Fixed and movable hair	2	4	a,j	2,3,4
16.	Stadia constants, anallatic lens –Subtense bar – Self reducing tacheometers	3	4	a,e,j	2,3,4
17.	<b>CYCLE II</b>				
<b>UNIT V - ENGINEERING SURVEYS</b>					
18.	Reconnaissance, Preliminary and location surveys for engineering projects	2	5	a,j	1, 2,3,4
19.	Layout – Setting our works – Curves – Curve ranging	1	5	a,j	1, 2,4
20.	Horizontal and vertical curves – Simple curves- Setting with chain and tapes, tangential angles by theodolite	2	5	a,e,	2,4
21.	Compound and reverse curves – Transition curves	1`	5	a,e,j	2,4
22.	Contours – Contouring – Methods	1	5	a,j	2,4
23.	Characteristics and uses of contours	1	5	a,j	2,4
24.	Plotting – Calculation of areas and volumes	1	5	a,j	2,4
<b>Model Examination</b>					
<b>Total hours</b>		45			

*The faculty members handling the course may conduct surprise test according to their convenience. However a question paper in hard copy as well as key shall be made available for the surprise test. The process shall be same as that of cycle tests.*

#### TEXT BOOKS

- Kanetkar.T.P, “Surveying and Levelling”, Vol. I and II, United Book Corporation, Pune, 2007.
- Punmia.B.C, “Surveying”, Vols.I and II, Laxmi Publications, 2006
- Chandra. A.M, “Plane Surveying and Higher Surveying”, New Age International (P) Limited, Publishers, Chennai, 2002

#### REFERENCES

- Basak, N.N, “Surveying and Levelling”, Tata McGraw Hill Education Private Limited, New Delhi, 2010
- Arora. K.P, “Surveying”, Volume 3, Standard Book House, 2000
- Bhavikatti,S.S, “ Surveying and Levelling”, Volume I, I.K. International Publishing House Pvt Ltd, New Delhi, 2008.

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HOD/CIVIL ENGINEERING