

DEPARTMENT OF CIVIL ENGINEERING



NATIONAL INSTITUTE OF TECHNOLOGY

TIRUCHIRAPPALLI - 620 015, TAMIL NADU, INDIA

CEPC14 / SURVEYING

Course objectives

The objective of the course is to:

1. To understand the importance of surveying in the field of civil engineering
2. To get introduced to different plane and geodetic surveying applications such as chain, compass, plane table, leveling, triangulation, trigonometric leveling etc
3. To understand the significance of each method in civil engineering and master the skill to carry out the proper surveying method in the field.
4. To design numerical solutions for carrying out surveying in civil engineering field.
5. To get introduced to modern advanced surveying techniques involved such as remote sensing, Total station, GPS etc.

Course Content

Introduction and Principles of surveying – Classification – Brief introduction to chain surveying – Compass surveying – Bearing of survey lines – systems and conversions – Local attraction – Latitude and departure – Traverse adjustment of closing errors

Plane Table surveying – instruments and accessories – methods of plane tabling - Levelling – Levelling instruments – Temporary and permanent adjustments – Booking – Reduction to levels – Correction for Curvature and refraction

Theodolite surveying – Vernier theodolite – Temporary and permanent adjustments – Measurement of horizontal and vertical angles – Tacheometric surveying – Stadia system – Fixed and Movable hair methods – Subtense bar – Tangential method

Geodetic surveying- Triangulation – different networks – orders and accuracies – intervisibility and height of stations – Trigonometrical levelling – Observations for heights and distances – Geodetic observations

Application of surveying - Curve setting – Types – Setting out of buildings, culverts, tunnels - Introduction to Advanced Surveying equipments - EDM – Total station - Remote Sensing – GPS

References

1. Duggal, S.K. Surveying Vol. I and II, Tata McGraw Hill, 2004.
2. Punmia, B.C. Surveying Vol.I and II, Standard Publishers, 1994.
3. Arora, K. R. Surveying Vol. I and II, Standard Book House, 1996.
4. Arora, K. R. Surveying Vol. I and II, Standard Book House, 1996.
5. Satheesh Gopi. Advanced Surveying, Pearson Education, 2007.
6. Satheesh Gopi. The Global Positioning System and Surveying using GPS, Tata McGraw, 2005.

Course outcomes

1. Knowledge of the importance of preliminary surveying such as chain surveying, compass surveying and error adjustment in the field of civil engineering applications such as structural, highway engineering, geotechnical engineering
2. Ability to plan a survey, taking accurate measurements, field booking, plotting and adjustments of transverse can be understood through levelling, plane table surveying etc.
3. Understanding the fundamental function, use of theodolite and tacheometry in practical applications such as road alignment, height of building, control point setting etc, with respect to utility and precision through the use of theodolite, tacheometry.
4. Ability to understand the concepts of geodetic surveying in plan a large-scale survey.
5. Ability to use principles of curve, building setting and understand the importance of advances surveying measurement techniques in civil engineering applications.

COURSE OUTLINE TEMPLATE

Course Title		SURVEYING	
Course Code	CEPC14	No. of Credits	3
Department	Civil Engineering	Faculty	Mr.Sandeep Singh Temporary Faculty
Other Course Teacher(s) / Dr.Nish Radhakrishnan		Telephone No.	+91-9962219864
		E-Mail	sandeep187sandy@gmail.com
Course Type	General Institute Requirement (GIR) Programme Core (PC) Programme Elective (PE) Open Elective (OE) Minor (MI) Essential Laboratory Requirement (ELR)		

COURSE OVERVIEW

This course provides an overview of surveying and its application through theoretical, practical sessions and several tutorials.

COURSE OUTCOMES (CO)

1. Knowledge of the importance of preliminary surveying such as chain surveying, compass surveying and error adjustment in the field of civil engineering applications such as structural, high way engineering, geotechnical engineering	1 2 4 9 10 11 12
2. Ability to plan a survey, taking accurate measurements, field booking, plotting and adjustment of traverse can be understood through leveling, plane table surveying etc	1 2 4 10 11 12
Understanding of fundamental function, use of Theodolite and tacheometry in practical applications such as road alignment, height of building, control point setting etc, with respect to utility and precision through the use of Theodolite, tacheometry	1 2 4 9 10 12 11
4. Ability to understand the concepts of geodetic surveying in plan a large scale survey	1 2 4 9 10 11 12
5. Ability to use the principles of curve, building setting and understand the importance of advances surveying measurement techniques in civil engineering applications.	1 2 4 5 9 10 11 12

COURSE TEACHING AND LEARNING ACTIVITIES

SI.	Week	Topic	Mode of Delivery
1.	week 1	Introduction and Principles of surveying Classification Brief introduction to chain surveying	Chalk and Board
2.	week 2	Compass surveying - Bearing of survey lines - systems and conversions Local attraction - Method I	Chalk and Board Chalk and Board/Problems
3.	week 3	Local attraction - Method II Tutorial 1 . Latitude and departure - Traverse adjustment of closing errors	Chalk and Board/Problems Open Book problems Chalk and Board/Problems

4.	week 4	Tutorial 2 . Plane Table/ Levelling - Lab Session . Plane Table surveying - instruments and accessories	Open Book problems Survey Lab Demo Chalk and Board
5.	week 5	Methods of plane tabling Levelling - Levelling instruments - Tem porary and permanent adjustments	Chalk and Board Chalk and Board
6.	week 6	Levelling Booking - Reduction to levels Method Levelling Booking - Reduction to levels Method	Chalk and Board/Problems Chalk and Board/Problems
7.	week 7	Tutorial 3 Levelling Booking -Reduction to levels Method	Chalk and Board/Problems
8.	week 8	Correction for Curvature and refraction . Theodolite Surveying, Temporary and permanent adjustment - Lab Session Measurement of horizontal and vertical angles	Chalk and Board
9.	week 9	Measurement of horizontal and vertical angles . Tacheometricsurveying, systems . Stadia system *Fixed methods	Chalk and Board Chalk and Board Chalk and Board/Problems
10.	week10	Stadia system - Fixed methods Tutorial 4 Movable hair methods, Subtense Bar	Chalk and Board/Problems . Open Book Problems . Chalk and Board/Problems
11.	week11	Tangential method Tutorial 5 Geodetic surveying - Triangulation - different networks - orders and accuracies	Chalk and Board/ Problems Open Book Problems Chalk and Board
12.	week12	Intervisibility and height of stations . Trigonometrical levelling - Observations for heights and distances Methods 1 & 2 Tutorial 6	Chalk and Board Chalk and Board/Problems Open Book Problems
13.	week13	Observations for heights and distances Methods 3 & 4 . Tutorial 7 . Geodetic observations	Chalk and Board/Problems Open Book Problems Chalk and Board
14.	week14	Curve setting - Types Setting up of curves Setting out of buildings, culverts, tunnels	Chalk and Board Chalk and Board Chalk and Board
15.	week15	Introduction to Advanced Surveying equipments . Lab Session . EDM - Total station	PPT Survey Lab Demo PPT

16.	week 16	Remote Sensing GPS	Chalk & Talk and PPT
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COURSE ASSESSMENT METHODS

Sl.No	Mode of Assessment	Week / Date	Duration	%Weightage
1.	Assessment 1	2nd week of august 2017	60 Minutes	20%
2.	Assessment 2	2nd week of september 2017	60 Minutes	20%
3.	Assignments 3 (Tutorials)	During regular Classes	60 Minutes	20%
5.	End Semester Examination	2nd week of November 2017	180 Minutes	40%

COURSE EXIT SURVEY (mention the ways in which the feedback about the course is assessed and indicate the attainment also)

The purpose of this survey is to find out from you about your learning experiences and your thoughts about the course. Your replies are very important to assist us in better serving our graduate students. Be assured that your comments will remain absolutely confidential and I will not be able to identify you from other participants.

COURSE POLICY (including plagiarism, academic honesty, attendance, etc.)

Attendance

- . The Closing date of attendance for the subject is Week 16'
- . **100%** attendance is desirable for every student, with minimum attendance being 75%'
- . Attendance during each assessment is mandatory
- . Reassessment for students failing to attend assessment I and/or II on genuine grounds will be conducted where the syllabus for reassessment will be combined portion of assessment I and II.

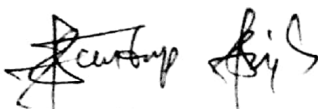
Eligibility criteria for passing:

As per the Institute Policy

ADDITIONAL COURSE INFORMATION

1. All the students are advised to check their NIT-T webmail regularly to know the updates. All the correspondence (schedule of classes / schedule of assessment / course material / any other information regarding this course) will be communicated through webmail.
2. Queries / Clarifications / Discussions (if required) may be E-mailed to me / contact me during working hours.

FOR APPROVAL


Course Faculty


Chairman (Class Committee)


HoD