

STATE COUNCIL FOR TECHNICAL EDUCATION AND VOCATIONAL TRAINING, ODISHA

TEACHING AND EVALUATION SCHEME FOR 7th Semester (Civil Engineering)(PT)(wef 2021-22)

| Subject Number | Subject Code | Subject | Periods/week | | | Evaluation Scheme | | | |
|------------------|--------------|--|--------------|---|-----------|--------------------------------|---------------|---------------|------------|
| | | | L | T | P | Internal Assessment/ Sessional | End Sem Exams | Exams (Hours) | Total |
| Theory | | | | | | | | | |
| Th.1 | | Land Survey-II | 5 | | - | 20 | 80 | 3 | 100 |
| Th.2 | | Construction Management | 4 | | - | 20 | 80 | 3 | 100 |
| | | <i>Total</i> | 9 | | | 40 | 160 | - | 200 |
| Practical | | | | | | | | | |
| Pr.1 | | Land Survey Practice -II | - | - | 8 | 50 | 150 | 3 | 200 |
| Pr.2 | | CADD Lab and Design & Detailing Practice | - | - | 3 | 25 | 100 | 3 | 125 |
| Pr.3 | | Technical Seminar | | | 2 | 50 | - | - | 50 |
| Pr.4 | | Project Phase-I | | | 5 | 50 | - | - | 50 |
| | | Student Centred Activities(SCA) | | - | 2 | - | - | - | - |
| | | <i>Total</i> | - | - | 20 | 175 | 250 | - | 425 |
| | | Grand Total | 9 | | 20 | 215 | 410 | - | 625 |

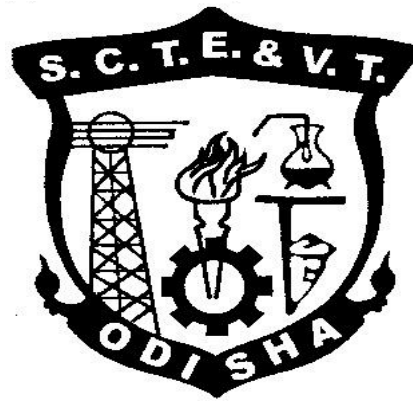
Abbreviations: L-Lecturer, T-Tutorial, P-Practical . Each class is of minimum 55 minutes duration

Minimum Pass Mark in each Theory subject is 35% and in each Practical subject is 50% and in Aggregate is 40%

SCA shall comprise of Extension Lectures/ Personality Development/ Environmental issues /Quiz /Hobbies/ Field visits/ cultural activities/Library studies/Classes on MOOCS/SWAYAM/ Idea Tinkering and Innovation Lab Practice etc. ,Seminar and SCA shall be conducted in a section.

There shall be 1 Internal Assessment done for each of the Theory Subject. Sessional Marks shall be total of the performance of individual different jobs/ experiments in a subject throughout the semester

CURRICULLUM OF 7TH SEMESTER
For
DIPLOMA IN CIVIL ENGINEERING(PT)
(Effective FROM 2021-22Sessions)



**STATE COUNCIL FOR TECHNICAL EDUCATION
& VOCATIONAL TRAINING, ODISHA,
BHUBANESWAR**

Th 1. LAND SURVEY– II

| | | | |
|--|---------|---------------------------|-------|
| Name of the Course: Diploma in Civil Engineering | | | |
| Course code: | | Semester | 6th |
| Total Period: | 75 | Examination | 3 hrs |
| Theory periods: | 5P/week | Class Test: | 20 |
| Maximum marks: | 100 | End Semester Examination: | 80 |

A. RATIONALE

Modern survey techniques are heavily dependent on advanced instruments and image based data. The course enables students to acquaint themselves with necessary information and processing procedures.

B. COURSE OBJECTIVES

On completion of the subject a student will be able to –

1. Solve numerical problems in the segment off tacheometry
2. Comprehend concepts of curve ranging and solve simple numerical
3. Study and interpret maps
4. Acquaint themselves with modern surveying methods including use of digital theodolite and total station
5. Comprehend basics of GPS setup, data processing and export
6. Comprehend basics of GIS and prepare map using GIS data

C. TOPIC WISE DISTRIBUTION

| Chapter | Name of topics | Hours |
|---------|---|-------|
| 1 | TACHEOMETRY: (Only concepts; applications without derivation) | 09 |
| 2 | CURVES | 08 |
| 3 | BASICS ON SCALE AND BASICS OF MAP: | 08 |
| 4 | SURVEY OF INDIA MAP SERIES: | 10 |
| 5 | BASICS OF AERIAL PHOTOGRAPHY, PHOTOGRAMMETRY, DEM AND ORTHO IMAGE GENERATION: | 10 |
| 6 | MODERN SURVEYING METHODS : | 10 |
| 7 | BASICS ON GPS & DGPS AND ETS: | 10 |
| 8 | BASICS OF GIS AND MAP PREPARATION USING GIS | 10 |

D. COURSE CONTENTS:

- 1 TACHEOMETRY:**
(Only concepts; applications without derivation)
 - 1.1 Principles, stadia constants determination
 - 1.2 Stadia tacheometry with staff held vertical and with line of collimation horizontal or inclined, numerical problems
 - 1.3 Elevations and distances of staff stations – numerical problems
- 2 CURVES :**
 - 2.1 compound, reverse and transition curve, Purpose & use of different types of curves in field

- 2.2 Elements of circular curves, numerical problems
- 2.3 Preparation of curve table for setting out
- 2.4 Setting out of circular curve by chain and tape and by instrument angular methods (i) offsets from long chord, (ii) successive bisection of arc, (iii) offsets from tangents, (iv) offsets from chord produced, (v) Rankine's method of tangent angles (No derivation)
- 2.5 Obstacles in curve ranging – point of intersection inaccessible

3 BASICS ON SCALE AND BASICS OF MAP:

- 3.1 Fractional or Ratio Scale, Linear Scale, Graphical Scale
- 3.2 What is Map, Map Scale and Map Projections
- 3.3 How Maps Convey Location and Extent
- 3.4 How Maps Convey characteristics of features
- 3.5 How Maps Convey Spatial Relationship
 - 3.5.1 Classification of Maps
 - 3.5.1 Physical Map
 - 3.5.2 Topographic Map
 - 3.5.3 Road Map
 - 3.5.4 Political Map
 - 3.5.5 Economic & Resources Map
 - 3.5.6 Thematic Map
 - 3.5.7 Climate Map

4 SURVEY OF INDIA MAP SERIES:

- 4.1 Open Series map
- 4.2 Defense Series Map
- 4.3 Map Nomenclature
 - 4.3.1 Quadrangle Name
 - 4.3.2 Latitude, Longitude, UTM's
 - 4.3.4 Contour Lines
 - 4.3.5 Magnetic Declination
 - 4.3.6 Public Land Survey System
 - 4.3.7 Field Notes

5 BASICS OF AERIAL PHOTOGRAPHY, PHOTOGRAMMETRY, DEM AND ORTHO IMAGE GENERATION:

- 5.1 Aerial Photography:
 - 5.1.1 Film, Focal Length, Scale
 - 5.1.2 Types of Aerial Photographs (Oblique, Straight)
- 5.2 Photogrammetry:
 - 5.2.1 Classification of Photogrammetry
 - 5.2.2 Aerial Photogrammetry
 - 5.2.3 Terrestrial Photogrammetry
- 5.3 Photogrammetry Process:
 - 5.3.1 Acquisition of Imagery using aerial and satellite platform
 - 5.3.2 Control Survey
 - 5.3.3 Geometric Distortion in Imagery
 - Application of Imagery and its support data
 - Orientation and Triangulation
 - Stereoscopic Measurement
 - 19.9.1 X-parallax
 - 19.2.2 Y-parallax

- 5.4 DTM/DEM Generation
- 5.5 Ortho Image Generation

6 MODERN SURVEYING METHODS :

- 6.1 Principles, features and use of (i) Micro-optic theodolite, digital theodolite
- 6.2 Working principles of a Total Station (Set up and use of total station to measure angles, distances of points under survey from total station and the co-ordinates (X,Y & Z or northing, easting, and elevation) of surveyed points relative to Total Station position using trigonometry and triangulation.

7 BASICS ON GPS & DGPS AND ETS:

- 7.1 GPS: - Global Positioning
 - 7.1.1 Working Principle of GPS,GPS Signals,
 - 7.1.2 Errors of GPS,Positioning Methods

- 7.2 DGPS: - Differential Global Positioning System
 - 7.2.1 Base Station Setup
 - 7.2.2 Rover GPS Set up
 - 7.2.3 Download, Post-Process and Export GPS data
 - 7.2.4 Sequence to download GPS data from flashcards
 - 7.2.5 Sequence to Post-Process GPS data
 - 7.2.6 Sequence to export post process GPS data
 - 7.2.7 Sequence to export GPS Time tags to file

- 7.3 ETS: - Electronic Total Station
 - 7.3.1 Distance Measurement
 - 7.3.2 Angle Measurement
 - 7.3.3 Leveling
 - 7.3.4 Determining position
 - 7.3.5 Reference networks
 - 7.3.6 Errors and Accuracy

8 BASICS OF GIS AND MAP PREPARATION USING GIS

- 8.1 Components of GIS, Integration of Spatial and Attribute Information
- 8.2 Three Views of Information System
 - 8.2.1 Database or Table View, Map View and Model View
- 8.3 Spatial Data Model
- 8.4 Attribute Data Management and Metadata Concept
- 8.5 Prepare data and adding to Arc Map.
- 8.6 Organizing data as layers.
- 8.7 Editing the layers.
- 8.8 Switching to Layout View.
- 8.9 Change page orientation.
- 8.10 Removing Borders.
- 8.11 Adding and editing map information.
- 8.12 Finalize the map

E. COURSE COVERAGE UPTO INTERNAL ASSESSMENT

Chapters 1, 2, 3, 4, 5

F. RECOMMENDED BOOKS

| Sl. No | Name of Authors | Titles of Book | Name of Publisher |
|--------|-----------------|---------------------------------------|-------------------------------|
| 1 | D. Gaikwad | Advanced Surveying | S.Chand |
| 2 | B. C. Punmia | Surveying Vol. I, II, III | Laxmi Publication, Delhi – 06 |
| 3 | R. Agor | A text book of surveying and leveling | Khanna Publishers, Delhi-6 |
| 4 | N. N. Basak | Surveying and Levelling | Tata Mcgraw Hill |

REFERENCE Materials

1. <https://theconstructor.org/surveying/surveying-principles-methods-civil-engineering/13048/>
2. <https://www.novatel.com/an-introduction-to-gnss/chapter-2-basic-gnss-concepts/>
3. http://gps.alaska.edu/jeff/Spatial_Reference/Freymueller_DOT_GPS.pdf
4. [https://drive.google.com/file/d/0B7srs19Fr4QdUzAzSIRwZnNRZ3M/view :-](https://drive.google.com/file/d/0B7srs19Fr4QdUzAzSIRwZnNRZ3M/view:-)
5. [Surveying and Levelling by N.N. Basak, 2nd Edition](#)
6. https://2018.foss4g-na.org/sites/default/files/slides/survey_resurvey_cadastral_layer_Odisha.pdf
7. <http://www.lawsfindia.org/pdf/orissa/2012/2012OR5.pdf>
8. http://revenueodisha.gov.in/sites/default/files/document/DILRMP/SOP_MRR_2016.pdf
9. http://revenueodisha.gov.in/sites/default/files/document/Govt_Land/22958_4_8_14.pdf
10. <https://www.google.co.in/search?q=map+reading+and+interpretation+ppt&oq=Map+reading+and+&aqs=chrome.3.69i57j0l5.9755j0j7&sourceid=chrome&ie=UTF-8>
11. Map Use: Reading, Analysis and Interpretation by Juliana O. Muehrcke and Philip Muehrcke
12. <http://indiageospatialforum.org/2012/proceedings/ppt/P%20K%20parida.pdf>
13. <http://www.indiana.edu/~paleoind/Resources/Guide%20to%20Topographic%20Maps.pdf>
14. <http://www.dst.gov.in/sites/default/files/nationalmappolicy.pdf>
15. Remote sensing and GIS / BasudebBhatta, 2nd edition, New Delhi, India, Oxford University Press, - Oxford higher education.
16. http://www.gisresources.com/basic-of-photogrammetry_2/
17. [http://giswin.geo.tsukuba.ac.jp/sis/tutorial/Fundamentals of GIS Estoque.pdf](http://giswin.geo.tsukuba.ac.jp/sis/tutorial/Fundamentals_of_GIS_Estoque.pdf)
18. [Learning Material Approved by R&DM Deptt., Govt. of Odisha](#)

Th 2. CONSTRUCTION MANAGEMENT

| | | | |
|--|---------|---------------------------|-------|
| Name of the Course: Diploma in Civil Engineering | | | |
| Course code: | | Semester | 6th |
| Total Period: | 60 | Examination | 3 hrs |
| Theory periods: | 4P/week | Class Test: | 20 |
| Maximum marks: | 100 | End Semester Examination: | 80 |

A. RATIONALE

The course aims to prepare students to be an effective team member in a construction organization setup. This necessitates managerial skills in managing materials, time and human resources. Also, the course helps the students to build concepts of disasters and explore about manmade disasters at national as well as international level with quality measuring indices and vulnerability atlas of India.. The course has been designed to cater to these needs.

B. COURSE OBJECTIVES

On completion of the course students will be able to-

1. Develop schedules for construction project
2. Realize significance of organizational behavior towards successful functioning
3. Explain the important terminology related to materials management, site management, equipment management and labor management
4. Understand construction quality indicators and their measurement
5. Apply methods to measure and monitor progress of work
6. Realize significance of safety requirement and regulations at workplace
7. Understand the importance and usage of the Vulnerability Atlas of India in construction Projects.

C. TOPIC WISE DISTRIBUTION

| Chapter | Name of topics | Hours |
|---------|---|-------|
| 1 | Introduction To Construction Management | 04 |
| 2 | Constructional Planning | 07 |
| 3 | Materials and Stores Management | 04 |
| 4 | Construction Site Management | 05 |
| 5 | Construction Organisation: | 06 |
| 6 | Construction Labour and Labour Management: | 06 |
| 7 | Equipment Management | 06 |
| 8 | Quality Control | 05 |
| 9 | Monitoring Progress | 06 |
| 10 | Safety Management In Construction | 05 |
| 11 | Role of Vulnerability Atlas of India in construction projects | 06 |

D. COURSE CONTENTS:

- 1 **Introduction To Construction Management**
 - 1.1 Aims and objectives of construction management.
 - 1.2 Functions of construction management.
 - 1.3 The construction team components- owner,engineer,architect,contractor-their functions and interrelationship and jurisdiction.
 - 1.4 Resources for construction management-men,machines,materials,money

- 2** **Constructional Planning**
 - 2.1 Importance of Construction Planning
 - 2.2 Developing work breakdown structure for construction work
 - 2.3 Construction Planning stages-Pre-tender stage, Post-tender stage.
 - 2.4 Construction scheduling by Bar charts-preparation of Bar Charts for simple construction works.
 - 2.5 Preparation of schedules for labour materials,machinery, finance for small works
 - 2.6 Limitation of Bar charts
 - 2.7 Construction scheduling by network techniques-defination of terms ,PERT and CPM techniques, advantages and disadvantages of two techniques, network analysis, estimation of time and critical path, application of PERT and CPM techniques in sample construction works.
- 3** **Materials and Stores Management**
 - 3.1 Classification of Stores-storage of stock.
 - 3.2 Issue of materials-indent , invoice, bin card
- 4** **Construction Site Management**
 - 4.1 Job Lay out-Objectives, Review plans, specifications, Lay out of equipments.
 - 4.2 Location of equipment, organizing labour at site.
 - 4.3 Job lay out for different construction sites.
 - 4.4 Principle of storing material at site.
- 5** **Construction Organization:**
 - 5.1 Introduction – Characteristics, Structure, importance.
 - 5.2 Organization types-line and staff, functions and their characteristics
 - 5.3 Principles of organization- meaning and significance of terms- control, authority, responsibility, job & task.
 - 5.4 Leadership-necessity, styles of leadership, role of leader
 - 5.5 Human relations-relations with subordinates, peers, Supervisors, characteristics of group behavior, mob psychology, handling of grievances, absenteeism, labour welfare.
 - 5.6 Conflicts in organization-genesis of conflicts, types-intrapersonal, interpersonal, intergroup, resolving conflicts.
- 6** **Construction Labour and Labour Management:**
 - 6.1 Preparing Labour schedule
 - 6.2 Essential steps for optimum labour output
 - 6.3 Labour characteristics
 - 6.4 Wages & their payment
 - 6.5 Labour incentives
 - 6.6 Motivation- Classification of motives, different approaches to motivation.
- 7** **Equipment Management**
 - 7.1 Preparing the equipment schedule
 - 7.2 Identification of different alternative equipment
 - 7.3 Importance of Owning & operating costs in making decisions for hiring & purchase of equipment
 - 7.4 Inspection and testing of equipment
 - 7.5 Equipment maintenance
- 8** **Quality Control**
 - 8.1 Concept of quality in construction
 - 8.2 Quality Standards- during construction, after construction, destructive & non destructive methods.

- 9 Monitoring Progress**
- 9.1 Programme and progress of work
- 9.2 Work study
- 9.3 Analysis and control of physical and financial progress corrective measures.
- 10 Safety Management In Construction**
- 10.1 Importance of safety
- 10.2 causes and effects of accidents in construction works
- 10.3 Safety measures in worksites for excavation, scaffolding, formwork, fabrication and erection, demolition.
- 10.4 Development of safety consciousness
- 10.5 Safety legislation- Workman's compensation act, contract labour act.
- 11 Role of Vulnerability Atlas of India in construction projects**
- 11.1 Introduction to Vulnerability Atlas of India, Concepts of natural hazards and disasters and vulnerability profile of India. Definition of disaster related terms.
- 11.2 Earthquake hazard and vulnerability, Magnitude and intensity scales of earthquake, seismic zones, earthquake hazard maps, types of structures and damage classification, effects in housing and resistant measures.
- 11.3 Wind / Cyclone hazard and vulnerability, wind speed and pressures, wind hazard and cyclone occurrence maps, storm surveys and cyclone resistant measures.
- 11.4 Flood hazard and vulnerability, Flood hazard and Flood prone areas of the country, General protection of habitants and flood resistant construction.
- 11.5 Landslides, Tsunamis and Thunderstorm hazards and vulnerability, Landslide & Thunderstorm incidence maps, Measures against Tsunami hazards.
- 11.6 Housing vulnerability risk tables and usage of vulnerability atlas of India, Inclusion of vulnerability atlas in Tender documents.

E. COURSE COVERAGE UPTO INTERNAL ASSESSMENT

Chapters 1, 2, 3, 4, 5

F. RECOMMENDED BOOKS

| Sl. No | Name of Authors | Titles of Book | Name of Publisher |
|--------|--|---|----------------------------------|
| 1 | M. R. Samal & R.L. Sahoo | Construction Management | Kalyani Publication |
| 2 | PS Gahlot & B M Dhir | Construction planning and management | New age international Publishers |
| 3 | Robert L Peurifoy & William B Ledbetter | Construction Planning equipment and methods | TMH Education |
| 4 | Dr. U K Shrivastava | Construction planning and management | Galgotia Publications |
| 5 | SC Sharma | Construction equipment and its management | Khanna Publishers |
| 6 | B Sengupta & H Guha | Construction management and planning | TMH Education |
| 7 | Vulnerability Atlas of India:- Published By BMTPC of India | | |

Pr 1. LAND SURVEY PRACTICE – II

| | | | |
|--|---------|---------------------------|-----------------|
| Name of the Course: Diploma in Civil Engineering | | | |
| Course code: | | Semester | 6 th |
| Total Period: | 75 | Examination | 3 hrs |
| Lab. periods: | 5P/week | Term Work | 50 |
| Maximum marks: | 200 | End Semester Examination: | 150 |

A. RATIONALE

Current age Civil Engineering professionals are required to be conversant with traditional as well as modern equipments and techniques for creating accurate maps. The course trains the students in skill sets required to use traditional high-end equipments and modern tools.

B. COURSE OBJECTIVES

On completion of the course students will be able to-

1. Conduct trigonometric leveling work in the field with the help of plane table surveying or geodetic surveying.
2. Prepare contoured maps or plans requiring both the horizontal as well as vertical control
3. Set out circular curve in the field.
4. Prepare survey map by conducting traverse survey with theodolite.
5. Lay out the construction plan of different types of structures at the site.
6. Study and use of modern electronic surveying instruments for its different applications.

C. TOPIC WISE DISTRIBUTION

| Chapter | Name of topics | Hours |
|---------|---|-------|
| 1 | Trigonometrical surveying & Tacheometry | 10 |
| 2 | Setting out curves and site surveying | 10 |
| 3 | Study of map and map series | 10 |
| 4 | GPS & DGPS and ETS | 25 |
| 5 | GIS and map preparation using GIS | 20 |

D. COURSE CONTENTS

1.0 TRIGONOMETRICAL SURVEYING & TACHEOMETRY:

- 1.1 Determination of height of 3 objects whose bases are accessible
- 1.2 Determination of stadia constants
- 1.3 Determination of horizontal distance and elevation with Staff vertical, by stadia method

2.0 SETTING OUT CURVES AND SITE SURVEYING:

- 2.1 Setting out a simple circular curve by offsets from long chord
- 2.2 Setting out a simple circular curve by offsets from the tangent
- 2.3 Setting out a simple circular curve by offsets from chords produces
- 2.4 Setting out a simple circular curve by Rankine's method of tangent angle (Deflection angles)
Setting out a site the center line and foundation width of a building from the given plan
- 2.5 Setting out the foundation line for a culvert

2.6 Dividing an area into plots of given size

3. STUDY OF MAP AND MAP SERIES:

- 3.1 Physical Map
- 3.2 Topographic Map
- 3.3 Road Map
- 3.4 Political Map
- 3.5 Economic & Resources Map
- 3.6 Thematic Map
- 3.7 Climate Map
- 3.8 Open Series map and Defense Series Map

4. STUDY ON GPS & DGPS AND ETS:

- 4.1 GPS: - Global Positioning, GPS Signals, Errors of GPS, Positioning Methods
- 4.2 DGPS: - Differential Global Positioning System
 - 4.2.1 Base Station Setup
 - 4.2.2 Rover GPS Set up
 - 4.2.3 Download, Post-Process and Export GPS data
 - 4.2.4 Sequence to download GPS data from flashcards
 - 4.2.5 Sequence to Post-Process GPS data
 - 4.2.6 Sequence to export post process GPS data
 - 4.2.7 Sequence to export GPS Time tags to file
- 4.3 ETS: - Electronic Total Station
 - 4.3.1 Distance Measurement
 - 4.3.2 Angle Measurement
 - 4.3.3 Leveling
 - 4.3.4 Determining position
 - 4.3.5 Reference networks
 - 4.3.6 Errors and Accuracy

5. STUDY OF GIS AND MAP PREPARATION USING GIS

- 5.1 Components of GIS, Integration of Spatial and Attribute Information
- 5.2 Three Views of Information System
 - 5.2.1 Database or Table View, Map View and Model View
- 5.3 Spatial Data Model
- 5.4 Attribute Data Management and Metadata Concept
- 5.5 Prepare data and adding to Arc Map.
- 5.6 Organizing data as layers.
- 5.7 Editing the layers.
- 5.8 Switching to Layout View.
- 5.9 Change page orientation.
- 5.10 Removing Borders.
- 5.11 Adding and editing map information.
- 5.12 Finalize the map

E. RECOMMENDED BOOKS:

| Sl. No | Name of Authors | Titles of Book | Name of Publisher |
|--------|----------------------------|---------------------------------------|--------------------|
| 1 | R. Agor | A text book of surveying and leveling | Khanna Publishers, |
| 2 | B. C. Punmia | Surveying Vol. I, II, III | Laxmi Publication |
| 3 | D. Gaikwad, S. Chand & Co. | Advanced Surveying | |
| 4 | Bhatta | Remote sensing & GIS | Oxford Publication |

REFERENCE Materials

1. <https://theconstructor.org/surveying/surveying-principles-methods-civil-engineering/13048/>
2. <https://www.novatel.com/an-introduction-to-gnss/chapter-2-basic-gnss-concepts/>
3. http://gps.alaska.edu/jeff/Spatial_Reference/Freymueller_DOT_GPS.pdf
4. [https://drive.google.com/file/d/0B7srsI9Fr4QdUzAzSIRwZnNRZ3M/view :-](https://drive.google.com/file/d/0B7srsI9Fr4QdUzAzSIRwZnNRZ3M/view:-)
5. [Surveying and Levelling by N.N. Basak, 2nd Edition](#)
6. [https://2018.foss4g-na.org/sites/default/files/slides/survey_resurvey_cadastral_layer Odisha.pdf](https://2018.foss4g-na.org/sites/default/files/slides/survey_resurvey_cadastral_layer_Odisha.pdf)
7. <http://www.lawsofindia.org/pdf/orissa/2012/2012OR5.pdf>
8. http://revenueodisha.gov.in/sites/default/files/document/DILRMP/SOP_MRR_2016.pdf
9. http://revenueodisha.gov.in/sites/default/files/document/Govt_Land/22958_4_8_14.pdf
10. <https://www.google.co.in/search?q=map+reading+and+interpretation+ppt&oq=Map+reading+and+&aqs=chrome.3.69i57j0l5.9755j0j7&sourceid=chrome&ie=UTF-8>
11. [Map Use: Reading, Analysis and Interpretation by Juliana O. Muehrcke and Philip Muehrcke](#)
12. <http://indiageospatialforum.org/2012/proceedings/ppt/P%20K%20parida.pdf>
13. <http://www.indiana.edu/~paleoind/Resources/Guide%20to%20Topographic%20Maps.pdf>
14. <http://www.dst.gov.in/sites/default/files/nationalmappolicy.pdf>
15. [Remote sensing and GIS / BasudebBhatta, 2nd edition, New Delhi, India, Oxford University Press, - Oxford higher education.](#)
16. http://www.gisresources.com/basic-of-photogrammetry_2/
17. [http://giswin.geo.tsukuba.ac.jp/sis/tutorial/Fundamentals of GIS Estoque.pdf](http://giswin.geo.tsukuba.ac.jp/sis/tutorial/Fundamentals_of_GIS_Estoque.pdf)
18. [Learning Material Approved by R&DM Deptt., Govt. of Odisha](#)

Pr 2. CADD Lab and Design & Detailing Practice

| | | | |
|--|---------|------------------------|-------|
| Name of the Course: Diploma in Civil Engineering | | | |
| Course code: | | Semester | 6th |
| Total Period: | 45 | Examination | 3 hrs |
| Practical periods: | 3P/week | Sessional Examination: | 25 |
| Maximum marks: | 125 | Practical Examination: | 100 |

A. RATIONALE

The course intends to imbibe necessary skills in using software towards design and drafting.

B. COURSE OBJECTIVES

On completion of the course students will be able to

1. Draw necessary detailing and schedule of bars for the various structural members
2. Draw important components of buildings using AutoCAD
3. Draw connectors using AutoCAD
4. Use STADD Pro in modeling structural members
5. Analyze the stress and deformation pattern in structural members
6. Design of buildings using STADD Pro software
7. Prepare building drawings suiting to approval needs prescribed by regulatory bodies

C. TOPIC WISE DISTRIBUTION

| Chapter | Name of topics | Hours |
|---------|-------------------------------|-------|
| 1 | Structural Detailing Practice | 20 |
| 2 | Use of STADD Pro Software | 15 |
| 3 | Revit Architecture Software | 10 |

D. COURSE CONTENTS

1.0 Structural Detailing Practice:

Draw the following with necessary details and schedule of bars from supplied sketches or given references such as SP 34

- 1.1 Slab, beam and lintel with chajja as in a simple building (Help from Sections 8 & 9 of SP 34 may be taken) (Plate I)
- 1.2 Columns, column-beam connections with & without splicing, isolated footing, staircase (Help from sections 6, 7, 10 of SP 34 may be taken)(Plate 2)
- 1.3 Different types of bolt connections, welded connections. (Plat3)
- 1.4 Details of Pile and Pile cap

2.0 Use of STADD Pro Software:

- 2.1 2-D Modelling of structures, Use of Structure wizard, Geometry, Property, Support, Loads and combinations, Analysis
- 2.2 Analysis of a Continuous beam with more than two span subjected to udl and point load
- 2.3 3-D modeling of building structures ,dead load, live load, earthquake and wind load analysis, design of a 3 storeyed building and preparation of reinforcement drawing and detailing
- 2.4 Introduction to STADD foundation.

3.0 Revit Architecture Software:

- 3.1 Basics- Modify, Wall, Door, Window, Component Room, Roof, Floor, Grid, Lines, Dimension, Section, Level, Text, View
- 3.2 Modelling- Ramp, Railing, Stair
- 3.3 Site- Topo surface- Parking Component, Site Component
- 3.4 Align, Split, Trim, offset, Match type, Line work, Paint, Scale, Unit
- 3.5 3D View
- 3.6 Preparation of approval drawing of a double storied residential building from given specifications with its 3D view using above commands

SOFTWARES REQUIRED:

- 1) STADD-Pro/V8i (latest Version) - Bentley
- 2) AutoCAD (Architecture) 2010 (Book) -William G. Wyatt

Pr.3 -TECHNICAL SEMINAR

| | | | |
|---------------|-----------------|--------------------------|----------|
| Total Periods | 02 | Maximum Marks | 50 Marks |
| Lab. Periods: | 02Periods /week | Term Works | 50Marks |
| Examination | | End Semester Examination | -- |

A. Objective:

Each student has to select a recent topic of latest technology in the area of Computer Science and present a seminar in front of all students of the class. He/She has to prepare a PowerPoint presentation of the selected topic of minimum 10 slides and the total presentation will be approximately 10 minutes duration. There will be an interactive session between the presenter and the rest of the students including the faculty members of the dept at the end of presentation. A student has to present at least 2 nos. of seminar during a semester and to submit the report for evaluation.

Pr 3. PROJECT WORK (Phase-I)

| | | | |
|--------------------------------------|-----------|-----------------|-----------------|
| Name of the Course: Diploma in Civil | | | |
| Course code: | | Semester | 7 th |
| Total Period: | 60 | Examination : | - |
| Theory periods: | 4P / week | Sessional Marks | 50 |
| | | TOTAL Marks | 50 |

RATIONALE

Students' Project Work aims at developing innovative skills in the students whereby they apply the knowledge and skills gained through the course covered in many subjects and Labs, by undertaking a project. The prime emphasis of the project work is to understand and apply the basic knowledge of the principles of civil engineering practices in real life situations, so as to participate and manage a large civil engineering project in future.

Entire Project shall spread over 7th and 8th Semester. Part of the Project covered in 7th Semester shall be named as *Project Phase-I* and balance portion to be covered in 8th Semester shall be named as *Project Phase-II*.

OBJECTIVES

After undergoing the Project Work, the student will be able to:

- Implement the theoretical and practical knowledge and skills gained through various subjects/courses into an application suitable for a real practical working environment, preferably in an industrial environment.
- Develop civil engineering knowledge and applications in implementing these for the actual needs of the community/industry.
- Explain the working of industrial environment and its work ethics.
- Explain what entrepreneurship is and how to become an entrepreneur.
- Identify and contrast gap between the technological knowledge acquired through curriculum and the actual industrial need and to compensate it by acquiring additional knowledge as required.
- Carry out cooperative learning through synchronous guided discussions within the class in key areas, asynchronous document sharing and discussions, as well as prepare collaborative edition of the final project report.
- Field computing and to achieve real life experience in civil engineering planning, designing and execution.
- To develop the skill of writing Project Report

General Guidelines

The individual students have different aptitudes and strengths. Project work, therefore, should match the strengths of students. For this purpose, students should be asked to identify the type of project work, they would like to execute. The activity of problem identification should begin well in advance (right from beginning of 7th semester). Students should be allotted a problem of interest to him/her as a project work. It is also essential that the faculty of the respective department may have a brainstorming session to identify suitable project assignments for their students. The project assignment can be individual assignment or a group assignment. There should not be more than 5 students if the project work is given to a group. The project work identified in collaboration with industry should be preferred.

Following are the broad suggestive areas of project work

- ✓ Qualitative analysis of any one or more of the civil engineering materials by addition or alteration of one or more constituents to assess their suitability as construction materials.
- ✓ Characterization of one or more locally available/recently developed civil engineering materials
- ✓ Experimental investigation of behavior of structural elements.
- ✓ Preparation of innovative structural models by use of materials having close resemblance to real life structures.
- ✓ Qualitative and/or Quantitative analysis of Physio-chemical characteristics of water from one or more sources of water.
- ✓ Analysis, design and/or estimation of civil engineering structures. Use of software for execution of projects may be encouraged.
- ✓ Planning, testing and execution of construction project.
- ✓ Soil properties enhancement using different available materials.
- ✓ Development of Waste disposal system including e-waste.
- ✓ Application of different surveying techniques for solving real world problem.
- ✓ Traffic volume studies and congestion solution.
- ✓ Any other related area found worth.

A suggestive criterion for assessing student performance by the external (preferably person from industry) and internal (teacher) examiner is given in table below:

| SI. No. | Performance Criteria |
|---------|---|
| 1. | Selection of project assignment |
| 2. | Planning and execution of considerations |
| 3. | Quality of performance |
| 4. | Providing solution of the problems or production of final product |
| 5. | Sense of responsibility |
| 6. | Self expression/ communication/ Presentation skills |
| 7. | Interpersonal skills/human relations |
| 8. | Report writing skills |
| 9 | Viva voce |

The teachers are free to evolve other criteria of assessment, depending upon the type of project work. It is proposed that the institute may organize an annual exhibition of the project work done by the students and

invite leading Industrial organisations to such an exhibition.

Project Phase-I and Phase-II

The Project work duration shall cover 2 semesters(7th and 8th sem). The Grouping of students, selection of Project, assignment of Project Guide to the Group shall be done in the beginning of 7th sem under Project Phase-I. The students may be allowed to study literature, any existing system and then define the Problem/objective of the Project. Preliminary work upto Design of the system have to be complete in Phase-I. Execution of work may begin in Phase-I depending on the Project. Project Milestones are to be set so that progress can be tracked . In Phase-II Execution of work and Documentation have to be complete. Project Report have to be prepared and complete in Phase-II. All Project reports should be organized uniformly in proper order, irrespective of group. Teacher Guides can make suitable alteration in the components of Task and schedule.

At the end of Project Phase-I in 7th semester there shall be one presentation by each group to mark to progress and also to judge whether the Project is moving in right direction as per the objective of the Project.