1.2.2 / 1.2.3

Note : Computer Centre will also open in Vacation (Only for Girls)

RGPG COMPUTER CENTRE

RG(PG) College Meerut

कम्प्यूटर सीखे! स्वयं को आत्मनिर्भर बनाए!

Special Discount Offer

Course on Computer Concepts(CCC)

कम्प्यूटर कोर्स

NIELIT (DOEACC) Government of India Course. (Required in Govt. Jobs)

Introduction to Computer, (English, Hindi) Typing Tutor, Operating System (Linux, Windows 10), Word, Excel, PowerPoint, Outlook (Office 2010), Libre Open Office Introduction to Internet, Web Browser, Communication and E-Mail, Chat, Searching Jobs,Online Shopping, Social Networking, e-Governance, Digital Financial Tools, Internet of Things, Cyber Security, Searching and downloading Information etc.

Duration : 3 Months

'O' Level

NIELIT DOEACC Government of India Course. (Required in Govt. Jobs)

- Information Technology tools and Network Basis.
- Web Designing & Publishing.
- Programming and Problem Solving through Python
- Internet of Things and its Application.
- Project.

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Duration : 1 Year

Fundamental Accounting with Tally ERP9

Fundamental of Accounting, Basics of Tally & Entries.
(Covers B.Com, M.Com Syllabus)

Duration : 1 Month

Accounting with Tally ERP9

- Fundamental of Accounting, Basic & Traders Accounting, Transaction, Invoice & POS, Inventory.

Duration : 3 Months

Advance Accounting with Tally ERP9

- Fundamental of Accounting, Basic & Traders Accounting, Transaction, Invoice & POS, Inventory, Payroll, Budget, Job Costing, Multilingual, Multiple Godown, Stocks, Security & Data Maintenance, Tax Accounting (TDS, FBT, Service Tax, VAT, TCS, CST, Excise & Custom Duty), Discount, GST

Duration : 6 Months

English & Hindi Typing : Duration 2 Months

1.2.2 / 1-2-3

Spoken English, Personality Development, Grooming & Makeup

अंग्रेजी बोलना सीखे! स्वयं को आकर्षक बनाए!

Body Language, Boosting Confidence, Building Self-Esteem and Confidence, Communication Skills, Listening Skills, Fluency in English Speaking, Working on Ascent and Pronunciation, Public Speaking, Presentation Skills, Grooming Tips, Decoding Body Language, Dressing Etiquette, Preparation of Self Introduction, Understanding yourself, How to be the best version of yourself?, Interview Preparation, Grammar, Vocabulary, Phrasal Verbs, Tongue Twister, Daily Proverb Exercise, Song Session, Video Session, American Slang Word, Story Presentation, Grooming & Basic Makeup Classes.

Duration : 3 Months

Desktop Publishing (DTP)

Word, Page Maker, Corel Draw, Photoshop.

Duration : 3 Months

Web Designing

Internet, Website Planning & Designing, HTML, Dream weaver, Flash, CorelDraw, Photoshop, Java Script, Web Hosting.

Duration : 4 Months

SQL Server (RDBMS)

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Microsoft, SQL Server & SQL Language

Duration : 3 Months

C, C++ , Java, C#(Sharp), ASP.Net Programming

C or C++	: Duration 2 Months	Java	: Duration 3 Months
C#(Sharp)	: Duration 3 Months	ASP.Net	: Duration 3 Months
Python	: Duration 3 Months		

Internet

Introduction to Internet, Google, YouTube, Email, Rediff, Gmail, Facebook, Twitter, Naukri.com, Searching Information, Email, Online Shopping, Video, Songs Downloading, Chat, Video Calling etc.

Duration : 1 Months

Diploma in Office Automation & E-Governance

(By UGC Community College, UGC Government of India)
M S Office, Networking, Programming, Software, Website Development

Duration : 1 Year

Benefits

☞ Courses in College Campus ☞ Discounted Fee ☞ Wi – Fi Facility
☞ Flexible Timing ☞ Books ☞ Diploma ☞ Placement

RGPG Computer Centre

UGC Community College, RG(PG) College Meerut
Phone No.: 9837371086, 9837927353

1.2.2/1.2.3

Diploma in Office Automation & E-Governance

(By UGC Community College, UGC Government of India)

Duration : 1 Year

The 12th Five Year Plan Document of the Planning Commission has also laid a special emphasis on expansion of skill-based programmes in higher education. It recommends setting up of Community Colleges (CC) to serve multiple needs.

The main objectives of the scheme are:

(i) To make higher education relevant to the learner and the community;

(ii) To integrate relevant skills into the higher education system

(iii) To provide skill based education to students currently pursuing higher education but actually interested in entering the workforce at the earliest opportunity;

(iv) To provide employable and certifiable skills based on National Occupational Standards (NOSs) with necessary general education to Senior Secondary School pass-outs, with general education and /or vocational education background.

(v) To provide for up-gradation and certification of traditional / acquired skills of the learners irrespective of their age

(vi) To provide opportunities for community–based life-long learning by offering courses of general interest to the community for personal development and interest; (vii) to provide opportunity for vertical mobility to move to higher education in future

(vii) To offer bridge courses to certificate holders of general / vocational education, so as to bring them at par with appropriate NSQF level. (ix) to provide entrepreneurial orientation along with required skill training for self-employment and entrepreneurship development.

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Syllabus

IT Tools & Basics of Networks

Introduction to Computer

Computer and Latest IT gadgets, Evolution of Computers & its applications, IT gadgets and their applications, Basics of Hardware and Software, Central Processing Unit, Input devices, Output devices, Computer Memory & storage, Application Software, Systems Software, Utility Software, Open source and Proprietary Software, Mobile Apps.

Introduction to Operating

System Operating System, Basics of Operating system, Operating Systems for Desktop and Laptop, Operating Systems for Mobile Phone and Tablets, User Interface for Desktop and Laptop, Task Bar, Icons & shortcuts, Running an Application, Operating System Simple Setting, Using Mouse and Changing its Properties, Changing System Date and Time, Changing Display Properties, To Add or NIELIT Syllabus Booklet 'O' Level (IT)-

Revision V Document Version v1 dated 29th March, 2019 Remove Program and Features, Adding, Removing & Sharing Printers, File and Folder Management, Types of file Extensions

Word Processing Word Processing Basics

Opening Word Processing Package, Title Bar, Menu Bar, Toolbars & Sidebar, Creating a New Document, Opening and Closing Documents, Opening Documents, Save and Save As, Closing Document, Using The Help, Page Setup, Page Layout, Borders, Watermark, Print Preview, Printing of Documents, PDF file and Saving a Document as PDF file, Text Creation and manipulation, Document Creation, Editing Text, Text Selection, Cut, Copy and Paste, Font, Color. Style and Size selection, Alignment of Text, Undo & Redo, AutoCorrect, Spelling & Grammar, Find and Replace, Formatting the Text, Creating and using user defined Styles, Paragraph Indentation, Bullets and Numbering, Change case, Header & Footer, Table Manipulation, Insert & Draw Table, Changing cell width and height, Alignment of Text in cell, Delete / Insertion of Row, Column and Merging & Splitting of Cells, Border and Shading, Mail Merge, Table of Contents, Indexes, Adding Comments, Tracking changes

Spreadsheet Elements of Spread Sheet

Creating of Spread Sheet, Concept of Cell Address [Row and Column] and selecting a Cell, Entering Data [text, number, date] in Cells, Page Setup, Printing of Sheet, Saving Spreadsheet, Opening and Closing, Manipulation of Cells & Sheet, Modifying / Editing Cell Content , Formatting Cell (Font, Alignment, Style), Cut, Copy, Paste & Paste Special, Changing Cell Height and Width, Inserting and Deleting Rows, Column, AutoFill, Sorting & Filtering, Freezing panes, Formulas, Functions and Charts, Using Formulas for Numbers (Addition, Subtraction, Multiplication & Division), AutoSum, Functions (Sum, Count, MAX, MIN, AVERAGE),Sort, Filter, Advanced Filter, Database Functions (DSUM, DMIN,DMAX, DCOUNT, DCOUNTA), What-if Analysis, Pivot table Charts (Bar, Column, Pie, Line).

Presentation Creation of Presentation

Creating a Presentation Using a Template, Creating a Blank Presentation, Inserting & Editing Text on Slides, Inserting and Deleting Slides in a Presentation, Saving a Presentation, Manipulating Slides, Inserting Table , Adding ClipArt Pictures, Inserting Other Objects, Resizing and Scaling an Object, Creating & using Master Slide, Presentation of Slides , Choosing a Set Up for Presentation, Running a Slide Show, Transition and Slide Timings, Automating a Slide Show, Providing Aesthetics to Slides & Printing, Enhancing Text Presentation, Working with Color and Line Style, Adding Movie and Sound, Adding Headers, Footers and Notes, Printing Slides and Handouts

Introduction to Internet and WWW Basic of Computer Networks

Local Area Network (LAN), Wide Area Network (WAN), Network Topology , Internet, Concept of Internet & WWW, Applications of Internet, Website Address and URL, Introduction to IP Address, ISP and Role of ISP, Internet Protocol, Modes of Connecting Internet (HotSpot, Wifi, LAN Cable, BroadBand, USB Tethering), Identifying and uses of IP/MAC/IMEI of various devices, Popular Web Browsers (Internet Explorer/Edge, Chrome, Mozilla Firefox, Opera etc.), Exploring the Internet , Surfing the web, Popular Search Engines, Searching on Internet, Downloading Web Pages, Printing Web Pages

E-mail, Social Networking and e-Governance Services

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Structure of E-mail, Using E-mails, Opening Email account, Mailbox: Inbox and Outbox, Creating and Sending a new E-mail, Replying to an E-mail message, Forwarding an E-mail message, Searching emails, Attaching files with email, Email Signature, Social Networking & e-Commerce, Facebook, Twitter, Linkedin, Instagram, Instant Messaging (Whatsapp, Facebock Messenger, Telegram), Introduction to Blogs, Basics of E-commerce, Netiquettes, Overview of e-Governance Services like Railway Reservation, Passport, eHospital [CRS], Accessing e-Governance Services on Mobile Using "UMANG APP", Digital Locker

Digital Financial Tools and Applications Digital Financial Tools

Understanding OTP [One Time Password]and QR [Quick Response] Code, UPI [Unified Payment Interface], AEPS [Aadhaar Enabled Payment System], USSD[Unstructured Supplementary Service Data], Card [Credit / Debit], eWallet, PoS [Point of Sale], Internet Banking, National Electronic Fund Transfer (NEFT), Real Time Gross Settlement (RTGS), Immediate Payment Service (IMPS), Online Bill Payment

Overview of Futureskills and Cyber Security

Introduction to Internet of Things (IoT), Big Data Analytics, Cloud Computing, Virtual Reality, Artificial Intelligence, Social & Mobile, Blockchain Technology, 3D Printing/ Additive Manufacturing, Robotics Process Automation, Cyber Security, Need of Cyber Security, Securing PC, Securing Smart Phone

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Web Designing & Publishing

Introduction to Web Design

Introduction of Internet, WWW, What is Website? How the Website Works?, Web pages, Front End, Back End, Client and Server Scripting Languages, Responsive Web Designing, Types of Websites (Static and Dynamic Websites)

Editors Notepad

Downloading free Editors: Notepad++, Sublime Text Editor, Making use of Editors, File creation and editing, saving

HTML:

Introduction, Basic Structure of HTML , Head Section and Elements of Head Section, Formatting Tags :Bold , Italic, Underline, Strikethrough, Div,Pre Tag Anchor links and Named Anchors ImageTag, Paragraphs, Comments, Tables : Attributes –(Border, Cellpadding, Cellspacing , height , width), TR, TH, TD, Rowspan, Colspan Lists : Ordered List , Unordered List , Definition List, Forms, Form Elements, Input types, Input Attriutes, Text Input Text Area, Dropdown, Radio buttons , Check boxes ,Submit and Reset Buttons Frames : Frameset , nested Frames HTML 5 Introduction , HTML5 New Elements: Section , Nav, Article , Aside, Audio Tag, Video Tag, HTML5 Form Validations: Require Attribute, Pattern Attribute , Autofocus Attribute, email, number type, date type , Range type

CSS Introduction to CSS

Types of CSS, CSS Selectors : Universal Selector ,ID selector, Tag Selector, Class Selector, Sub Selector, Attribute Selector, Group Selector, CSS Properties : Back Ground

properties , Block Properties , Box properties , List properties , Border Properties , Positioning Properties, CSS Lists CSS Tables, CSS Menu Design CSS Image Gallery,

CSS Framework

Web Site Development using W3.CSS Framework, W3.CSS Intro, W3.CSS Colors, W3.CSS Containers, W3.CSS Panels, W3.CSSBorders, W3.CSSFonts, W3.CSS Text, W3.CSS Tables, W3.CSS List, W3.CSSImages, W3.CSS Grid

Javscript and Angular Js

Introduction to Client Side Scripting Language, Variables in Java Script, Operators in JS, Conditions Statements, JS Popup Boxes, JS Events, Basic Form Validations in JavaScript

Photo Editor

Features of Photo Editing: Tools: Selection Tools, Paint Tools ,Transform Tools, Text Tool, Layers, Brightness/ Contrast, Improve Colors and tone, Filters

Web Publishing and Browsing

Overview, SGML, Web hosting Basics, HTML, CGL, Documents Interchange Standards, Components of Web Publishing, Document management, Web Page Design Consideration and Principles, Search and Meta Search Engines, WWW, Browser, HTTP, Publishing Tools.

Programming and Problem Solving though Python Language

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Introduction to Programming

The basic Model of computation, algorithms, flowcharts, Programming Languages, compilation, testing & Debugging and documentation.

Algorithms and Flowcharts to Solve Problems

Flow Chart Symbols, Basic algorithms/flowcharts for sequential processing, decision based processing and iterative processing. Some examples like: Exchanging values of two variables, summation of a set of numbers, Decimal Base to Binary Base conversion, Reversing digits of an integer, GCD (Greatest Common Division) of two numbers, Test whether a number is prime, factorial computation, Fibonacci sequence, Evaluate 'sin x' as sum of a series, Reverse order of elements of an array, Find largest number in an array, Print elements of upper triangular matrix, etc.

Introduction to Python

Python Introduction, Technical Strength of Python, Introduction to Python Interpreter and program execution, Using Comments, Literals, Constants, Python's Built-in Data types, Numbers (Integers, Floats, Complex Numbers, Real, Sets), Strings (Slicing, Indexing, Concatenation, other operations on Strings), Accepting input from Console, printing statements, Simple 'Python' programs.

Operators, Expressions and Python Statements

Assignment statement, expressions, Arithmetic, Relational, Logical, Bitwise operators and

their precedence, Conditional statements: if, if-else, if-elif-else; simple programs, Notion of iterative computation and control flow –range function, While Statement, For loop, break statement, Continue Statement, Pass statement, else, assert.

Sequence Data Types

Lists, tuples and dictionary, (Slicing, Indexing, Concatenation, other operations on Sequence data type), concept of mutability, Examples to include finding the maximum, minimum, mean; linear search on list/tuple of numbers, and counting the frequency of elements in a list using a dictionary.

Functions

Top-down approach of problem solving, Modular programming and functions, Function parameters, Local variables, the Return statement, DocStrings, global statement, Default argument values, keyword arguments, VarArgs parameters. Library function-input(), eval(),print(), String Functions: count(), find(), rfind(), capitalize(), title(), lower(), upper(), swapcase(), islower() isupper(), istitle(), NIELIT Syllabus Booklet 'O' Level (IT)-Revision V Document Version v1 dated 29th March, 2019 replace(), strip(), lstrip(), rstrip(), aplit(), partition(), join(), isspace(), isalpha(), isdigit(), isalnum(), startswith(), endswith(), encode(), decode(), String: Slicing, Membership, Pattern Matching, Numeric Functions: eval(), max(), min(), pow(), round(), int(), random(), ceil(), floor(), sqrt(), Date & Time Functions, Recursion

File Processing Concept of Files

File opening in various modes and closing of a file, Reading from a file, Writing onto a file, File functions-open(), close(), read(), readline(),readlines(),write(), writelines(),tell(),seek(), Command Line arguments. (viii) Scope and Modules Scope of objects and Names, LEGB Rule Module Basics, Module Files as Namespaces, Import Model, Reloading Modules. (ix) NumPy Basics Introcuction to NumPy ,ndarray, datatypes, array attributes, array creation routines, Array From Existing Data, Array From Numerical Ranges, Indexing & Slicing

Introduction to Internet of Things(IoT) and its Application

Introduction to Internet of Things

Applications/devices, protocols, communication model Introduction - Overview of Internet of Things(IoT), the characteristics of devices and applications in IoT ecosystem, building blocks of IoT, Various technologies making up IoT ecosystem, IoT levels, IoT design methodology, The Physical Design/Logical Design of IoT, Functional blocks of IoT and Communication Models.

Things and Connections

Working of Controlled Systems, Real-time systems with feedback loop e.g. thermostat in refrigrator, AC, etc. Connectivity models – TCPIP versus OSI model, different type of modes using wired and wireless methodology, The process flow of an IoT application.

Sensors, Actuators and Microcontrollers Sensor

Measuring physical quantities in digital world e.g. light sensor, moisture sensor, temperature sensor, etc. Actuator – moving or controlling system e.g. DC motor, different

type of actuators Controller – Role of microcontroller as gateway to interfacing sensors and actuators, microcontroller vs microprocessor, different type of microcontrollers in embedded ecosystem.

Building IoT applications Introduction to Arduino IDE

Writing code in sketch, compiling-debugging, uploading the file to Arduino board, role of serial monitor. NIELIT Syllabus Booklet 'O' Level (IT)-Revision V Document Version v1 dated 29th March, 2019 Embedded 'C' Language basics - Variables and Identifiers, Built-in Data Types, Arithmetic operators and Expressions, Constants and Literals, assignment. Conditional Statements and Loops - Decision making using Relational Operators, Logical Connectives - conditions, if-else statement, Loops: while loop, do while, for loop, Nested loops, Infinite loops, Switch statement. Arrays – Declaring and manipulating single dimension arrays Functions - Standard Library of C functions in Arduino IDE, Prototype of a function: Formal parameter list, Return Type, Function call. Interfacing sensors – The working of digital versus analog pins in Arduino platform, interfacing LED, Button, Sensors-DHT, LDR, MQ135. Display the data on Liquid Crystal Display(LCD), interfacing keypad Serial communication – interfacing HC-05(Bluetooth module) Control/handle 220v AC supply – interfacing relay module.

Security and Future of IoT ecosystem Need of security in IoT

Why Security? Privacy for IoT enabled devices- IoT security for consumer devices- Security levels, protecting IoT devices Future IoT eco system - Need of power full core for building secure algorithms, Examples for new trends - AI, ML penetration to IoT

Soft skills-Personality Development Personality Development Determinants of Personality- self-awareness, motivation, self-discipline, etc., building a positive personality, gestures. Self-esteem - self-efficacy, self-motivation, time management, stress management, Etiquettes & manners. Communication and writing skills- objective, attributes and categories of communication, Writing Skills – Resume, Letters, Report, Presentation, etc. Interview

Programming in Java Language

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Introduction

- Why Java
- Paradigms
- Diff B/W Java & Other (C,C++)
- Java History
- Java Features
- Java programming format
- Java Statements
- Java Data Types

OOPS (Object Oriented Programming & Systems)

- Introduction
- Object
- Constructors
- This Key Word

- Inheritance
- Super Key Word
- Polymorphism (Over Loading & Over Riding)
- Abstraction
- Interface
- Encapsulation
- Introduction to all predefined packages
- User Defined Packages
- Access Specifires

String Manipulation

- String
- String Buffer

Array

- What is Array
- Single Dimensional Array
- Multi Dimensional Array
- Sorting of Arrays

Packages

Exception Handling

- Introduction
- Pre Defined Exceptions
- Try-Catch-Finally
- Throws, throw
- User Defined Exceptior examples

I/O Streams

- Introduction
- Byte-oriented streams
- Character – oriented streams
- File

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Multithreading

- Introduction
- Thread Creations
- Thread Life Cycle
- Life Cycle Methods
- Synchronization
- Wait() notify() notify all() methods

Wrapper Classes

- Introduction
- Byte, Short, Integer, Long, Float, Double, Character
- Boolean classes

Inner Classes

- Introduction
- Member Inner Class
- Static Inner Class
- Local Inner Class
- Anonymous Inner Class

AWT

- Introduction
- Components
- Event-Delegation-Model
- Listeners
- Layouts
- Individual Components Lable, Button, Check Box, Radio Buttcn,
- Choice, List, Menu, Text Field, Text Area

SWING (JFC)

- Introduction Diff B/W AWT and SWING
- Components hierarchy
- Panes
- Individual Swings components J Label
- JButton, JTextField, JTextAres

SQL

- Basics of SQL queries

JDBC

- Introduction
- JDBC Architecture
- Types of Drivers
- Statement
- Result Set
- Read Only Result Set
- Updatable Result Set
- Forward Only Result Set
- Scrollable Result Set
- Prepared Statement

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1.2.2 / 1.2.3

Course on Computer Concepts [CCC]

Objective:

The course is designed to equip a person to use computers for professional as well as day to day use. It provides theoretical background as well as in depth knowledge of Software/ packages. After completing the course the incumbent will be digitally literate and will be able to:

- Acquire confidence in using computers in Office and General Life;
- Will be able to identify the basic components of computers and terminology;
- Understand file management;
- Create documents using word processor, spreadsheet & presentation software;
- Understand computer networks, and browse the internet, content search, email and collaborate with peers;
- Use e-Governance applications; and use computer to improve existing skills and learn new skills
- Understanding Social Networking platform
- Using internet for Digital Financial services
- Develop knowledge about Futureskills

The module on financial literacy will enable the individuals to understand the various financial services and be aware of the various schemes of Government.

Duration:

80 Hours - (Theory: 32 hrs + Practical: 48 hrs)

This course can also be offered as 10 days full time intensive course.

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Eligibility:

No minimum qualification is required for applying and appearing for the examination in Course on Computer Concepts [CCC].

Job Role :

Computer Operator, Data Entry Operator and Social Media Operator

Detailed Syllabus and Learning Outcome:

S. No.	Chapter Name	Course Outline	Duration (Hours)		Learning Outcomes
			Theory	Lab	
1	Chapter-1 Introduction to Computer	1.0 Introduction 1.1 Objectives 1.2 Computer and Latest IT gadgets 1.2.1 Evolution of Computers & its applications 1.2.2 IT gadgets and their applications 1.3 Basics of Hardware and Software 1.3.1 Hardware	3	3	After completion of this chapter, the candidate will be able to • identify computers, IT gadgets and explain their evolution and

		1.3.1.1 Central Processing Unit 1.3.1.2 Input devices 1.3.1.3 Output devices 1.3.1.4 Computer Memory & storage 1.3.2 Software 1.3.2.1 Application Software 1.3.2.2 Systems Software 1.3.2.3 Utility Software 1.3.2.4 Open source and Proprietary Software 1.3.2.5 Mobile Apps 1.4 Summary 1.5 Model Questions and Answers			applications. • Get familiar with various input, output and hardware components of a computer along with storage devices. • Get familiar with various types of softwares, utilities used for computer and mobile apps.
2	**Chapter-2 Introduction to Operating System**	2.0 Introduction 2.1 Objectives 2.2 Operating System 2.2.1 Basics of Operating system 2.2.2 Operating Systems for Desktop and Laptop 2.2.3 Operating Systems for Mobile Phone and Tablets 2.3 User Interface for Desktop and Laptop 2.3.1 Task Bar 2.3.2 Icons & shortcuts 2.3.3 Running an Application 2.4 Operating System Simple Setting 2.4.1 Using Mouse and Changing its Properties 2.4.2 Changing System Date and Time 2.4.3 Changing Display Properties 2.4.4 To Add or Remove Program and Features 2.4.5 Adding, Removing & Sharing Printers 2.5 File and Folder Management 2.6 Types of file Extensions 2.7 Summary 2.8 Model Questions and Answers	3	4	After learning this chapter, candidate will be • Well acquainted with Operating System and its applications for both desktop and mobile devices. • able to identify various desktop screen components and modify various properties, date, time etc. • able to add and remove new program and features, manage files and folders. • Well versed with printing and know various types of file extensions.
3.	**Chapter-3** **WORD PROCESSING**	3.0 Introduction 3.1 Objective 3.2 Word Processing Basics 3.2.1 Opening Word Processing Package 3.2.2 Title Bar, Menu Bar, Toolbars & Sidebar 3.2.3 Creating a New Document 3.3 Opening and Closing Documents 3.3.1 Opening Documents 3.3.2 Save and Save As 3.3.3 Closing Document 3.3.4 Using The Help 3.3.5 Page Setup 3.3.6 Print Preview 3.3.7 Printing of Documents 3.3.8 PDF file and Saving a Document as PDF file	4	8	After completion of this chapter, candidate will have • In depth Knowledge of Word Processing, their usage, details of word processing screen. • Opening, saving and printing a document including pdf files. • Document creation, formatting of text,

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		3.4 Text Creation and manipulation 3.4.1 Document Creation 3.4.2 Editing Text 3.4.3 Text Selection 3.4.4 Cut, Copy and Paste 3.4.5 Font, Color, Style and Size selection 3.4.6 Alignment of Text 3.4.7 Undo & Redo 3.4.8 AutoCorrect, Spelling & Grammar 3.4.9 Find and Replace 3.5 Formatting the Text 3.5.1 Paragraph Indentation 3.5.2 Bullets and Numbering 3.5.3 Change case 3.5.4 Header & Footer 3.6 Table Manipulation 3.6.1 Insert & Draw Table 3.6.2 Changing cell width and height 3.6.3 Alignment of Text in cell 3.6.4 Delete / Insertion of Row, Column and Merging & Splitting of Cells 3.6.5 Border and Shading 3.7 Mail Merge 3.8 Shortcut Keys 3.9 Summary 3.10 Model Questions and Answers			paragraph and whole document. • Inserting Header and Footer on the document • Finding text on a word document and correcting spellings. • Able to insert and manipulate tables, enhance table using borders and shading features. • Can prepare copies of a document labels etc for sending various recipients using Mail Merge.
4.	**Chapter-4** **SPREAD SHEET**	4.0 Introduction 4.1 Objectives 4.2 Elements of Spread Sheet 4.2.1 Creating of Spread Sheet 4.2.2 Concept of Cell Address [Row and Column] and selecting a Cell 4.2.3 Entering Data [text, number, date] in Cells 4.2.4 Page Setup 4.2.5 Printing of Sheet 4.2.6 Saving Spreadsheet 4.2.7 Opening and Closing 4.3 Manipulation of Cells & Sheet 4.3.1 Modifying / Editing Cell Content 4.3.2 Formatting Cell (Font, Alignment, Style) 4.3.3 Cut, Copy, Paste & Paste Special 4.3.4 Changing Cell Height and Width 4.3.5 Inserting and Deleting Rows, Column 4.3.6 AutoFill 4.3.7 Sorting & Filtering 4.3.8 Freezing panes 4.4 Formulas, Functions and Charts 4.4.1 Using Formulas for Numbers (Addition, Subtraction, Multiplication & Division) 4.4.2 AutoSum 4.4.3 Functions (Sum, Count, MAX, MIN, AVERAGE) 4.4.4 Charts (Bar, Pie, Line) 4.5 Summary 4.6 Model Questions and Answers	4	8	After completion of this chapter, candidate will have good hands-on practice on • Basic Knowledge of Spreadsheet Processing, their usage, details of Spreadsheet screen. • Opening, saving and printing a Spreadsheet. • Spreadsheet creation, inserting and editing data in cells, sorting and filtering of data. • Inserting and deleting rows /columns. • Applying basic formulas and functions. • Prepare chart to represent the information in a

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5.	**Chapter-5** **Presentation**	5.0 Introduction 5.1 Objectives 5.2 Creation of Presentation 5.2.1 Creating a Presentation Using a Template 5.2.2 Creating a Blank Presentation 5.2.3 Inserting & Editing Text on Slides 5.2.4 Inserting and Deleting Slides in a Presentation 5.2.5 Saving a Presentation 5.3 Manipulating Slides 5.3.1 Inserting Table 5.3.2 Adding ClipArt Pictures 5.3.3 Inserting Other Objects 5.3.4 Resizing and Scaling an Object 5.3.5 Creating & using Master Slide 5.4 Presentation of Slides 5.4.1 Choosing a Set Up for Presentation 5.4.2 Running a Slide Show 5.4.3 Transition and Slide Timings 5.4.4 Automating a Slide Show 5.5 Providing Aesthetics to Slides & Printing 5.5.1 Enhancing Text Presentation 5.5.2 Working with Color and Line Style 5.5.3 Adding Movie and Sound 5.5.4 Adding Headers, Footers and Notes 5.5.5 Printing Slides and Handouts 5.6 Summary 5.7 Model Questions and Answers	4	8	pictorial form. After completion of this chapter, candidate will have good hands-on practice on • Basic Knowledge of PowerPoint presentations. • Opening/saving a presentation and printing of slides and handouts. • Manipulate slides to enhance the look of the slides as well as whole presentation by inserting a picture, objects, multimedia formatting etc. • Running a slide show with various transitions.
6.	**Chapter-6** **INTRODUCTION TO INTERNET AND WWW**	6.0 Introduction 6.1 Objectives 6.2 Basic of Computer Networks 6.2.1 Local Area Network (LAN) 6.2.2 Wide Area Network (WAN) 6.2.3 Network Topology 6.3 Internet 6.3.1 Concept of Internet & WWW 6.3.2 Applications of Internet 6.3.3 Website Address and URL 6.3.4 Introduction to IP Address 6.3.5 ISP and Role of ISP 6.3.6 Internet Protocol 6.3.7 Modes of Connecting Internet (Hotspot, Wi-Fi, LAN Cable, Broadband, USB Tethering) 6.3.8 Identifying and uses of IP/MAC/IMEI of various devices 6.4 Popular Web Browsers (Internet Explorer/Edge, Chrome, Mozilla Firefox, Opera etc.) 6.5 Exploring the Internet 6.5.1 Surfing the web 6.5.2 Popular Search Engines 6.5.3 Searching on Internet 6.5.4 Downloading Web Pages 6.5.5 Printing Web Pages	3	4	After completion of this chapter, candidate will be able to: • Gather knowledge of various types of networks and topologies. • Get an overview of Internet, its applications and various browsers available to access the internet. • Connect to Internet using various modes of connections/devices available. • Get knowledge of device identification on local network as well as on Internet for both Desktop

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		6.6 Summary 6.7 Model Questions and Answers			and Mobile Devices. • Can search Information on the Internet on various topics. • Download and print web pages.
7.	**Chapter-7** **E-mail, Social Networking and e-Governance Services**	7.0 Introduction 7.1 Objectives 7.2 Structure of E-mail 7.3 Using E-mails 7.3.1 Opening Email account 7.3.2 Mailbox: Inbox and Outbox 7.3.3 Creating and Sending a new E-mail 7.3.4 Replying to an E-mail message 7.3.5 Forwarding an E-mail message 7.3.6 Searching emails 7.3.7 Attaching files with email 7.3.8 Email Signature 7.4 Social Networking & e-Commerce 7.4.1 Facebook, Twitter, LinkedIn, Instagram 7.4.2 Instant Messaging (WhatsApp, Facebook Messenger, Telegram) 7.4.3 Introduction to Blogs 7.4.4 Basics of E-commerce 7.4.5 Netiquettes 7.5 Overview of e-Governance Services like Railway Reservation, Passport, eHospital [ORS] 7.6 Accessing e-Governance Services on Mobile Using "UMANG APP" 7.7 Digital Locker 7.8 Summary 7.9 Model Questions and Answers	3	6	After completion of this chapter, candidate will be able to: • Create an email account, compose an email, reply an email and send the email along with attachments. • Get familiar with Social Networking, Instant Messaging and Blogs. • Get familiar with e-Governance Services, e-Commerce and Mobile Apps.
8.	**Chapter-8** **DIGITAL FINANCIAL TOOLS AND APPLICATIONS**	8.0 Introduction 8.1 Objectives 8.2 Digital Financial Tools 8.2.1. Understanding OTP [One Time Password]and QR [Quick Response] Code 8.2.2 UPI [Unified Payment Interface] 8.2.3 AEPS [Aadhaar Enabled Payment System] 8.2.4 USSD[Unstructured Supplementary Service Data] 8.2.5 Card [Credit / Debit] 8.2.6 eWallet 8.2.7 PoS [Point of Sale] 8.3 Internet Banking 8.3.1 National Electronic Fund Transfer (NEFT) 8.3.2 Real Time Gross Settlement (RTGS) 8.3.3 Immediate Payment Service (IMPS) 8.4 Online Bill Payment 8.5 Summary 8.6 Model Questions and Answers	4	4	After completion of this chapter, candidate will be able to: • Know the Digital Financial Tools. • Get Knowledge of Internet Banking Modes. • Get familiar with e-Governance Services, e-Commerce and Mobile Apps. • Use the Digital Locker and will be able to store documents in Digital Locker.

9.	**Chapter-9** **Overview of Futureskills & Cyber Security**	9.0 Introduction to Futureskills 9.1 Introduction to 9.1.1 Internet of Things (IoT) 9.1.2 Big Data Analytics 9.1.3 Cloud Computing 9.1.4 Virtual Reality 9.1.5 Artificial Intelligence 9.1.6 Social & Mobile 9.1.7 Blockchain Technology 9.1.8 3D Printing/ Additive Manufacturing 9.1.9 Robotics Process Automation 9.2 Cyber Security 9.2.1 Need of Cyber Security 9.2.2 Securing PC 9.2.3 Securing Smart Phone 9.3 Summary 9.4 Model Questions and Answers	4	3	After completion of this chapter, candidate will be familiar with the : • Latest trends and technologies in upcoming fields in IECT. • Will be able to understand need of Cyber Security and will be able to secure their PC and Mobile devices by using basic security features.
Total Hours = 80			32	48	

For practical purpose latest version of Free Open Source Ubuntu & LibreOffice may be used.

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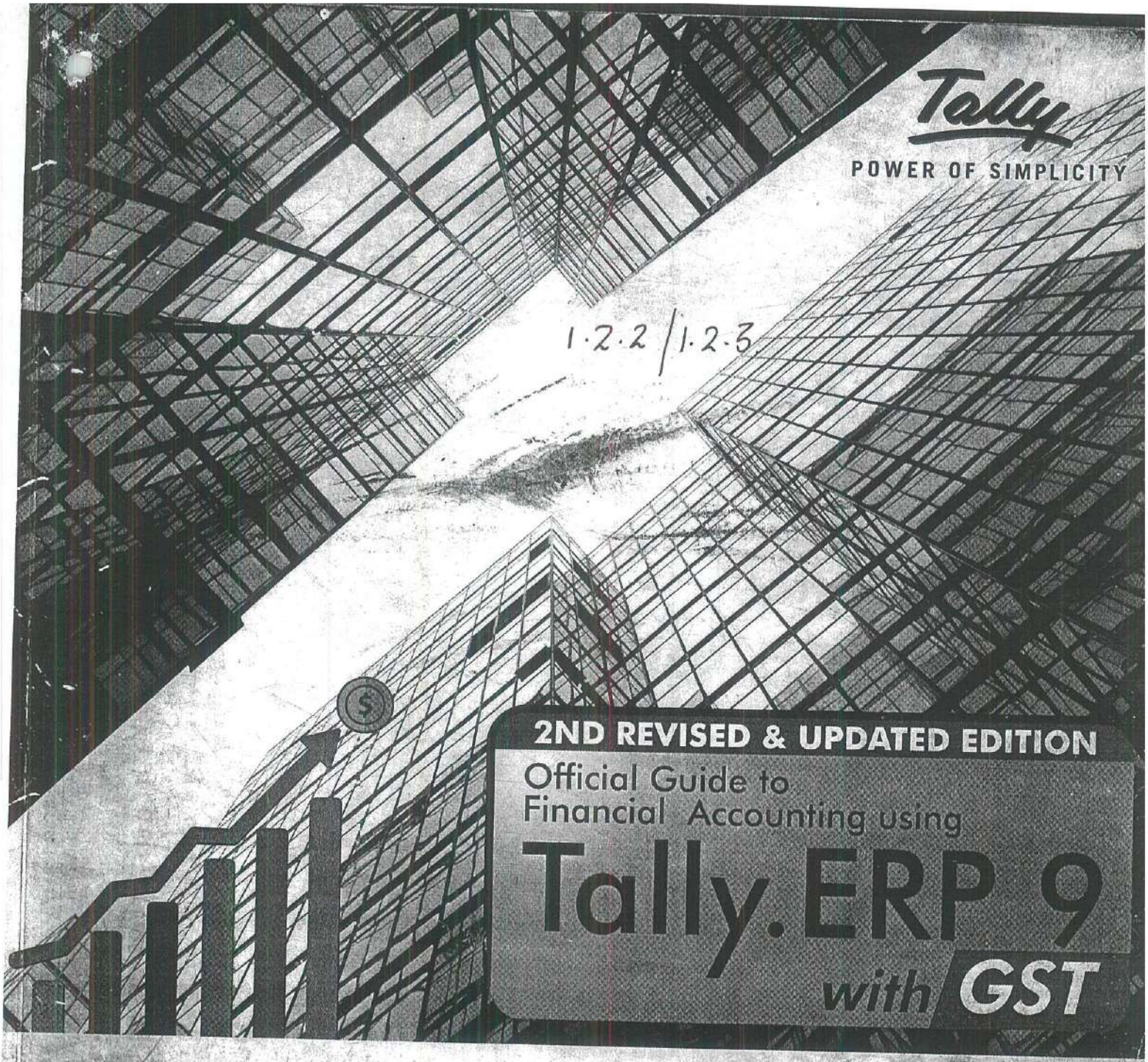

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POWER OF SIMPLICITY

1.2.2 / 1.2.3

2ND REVISED & UPDATED EDITION

Official Guide to Financial Accounting using

Tally.ERP 9 with GST

- Basics of Accountancy
- Principles, Concepts and Conventions of Accounting
- Recording Procedure in Accounting
- Bank Reconciliation
- Preparation of Final Accounts
- Concepts of Goods and Services Tax (GST)
- Computerised Accounting Using Tally.ERP 9 with GST
- Depreciation
- Accounting for Joint Venture
- Accounting for Consignment
- Hire Purchase and Instalment
- Accounting for Inland Branches

GST READY
Tally.ERP 9
Release 6

BPB PUBLICATIONS

Table of Contents

- Point data classification-Planimetry (Building, Power pole)
- Vectorization of Road feature by using LASS data.
- Point data classification-DTM and contour generation by LASS data.

6. Drone Assignments

- Flying the drone in selected area
- Making orthophcto from Drone image
- Making surface model from Drone images
- Making LULC map from orthoimage
- Generating DEM, DTM, TIN and DSM from Drone data input

Process of Evaluation

- Theory Exams
- Practical's Exams
- Presentations/ viva
- Tree plantations (Geotagged)

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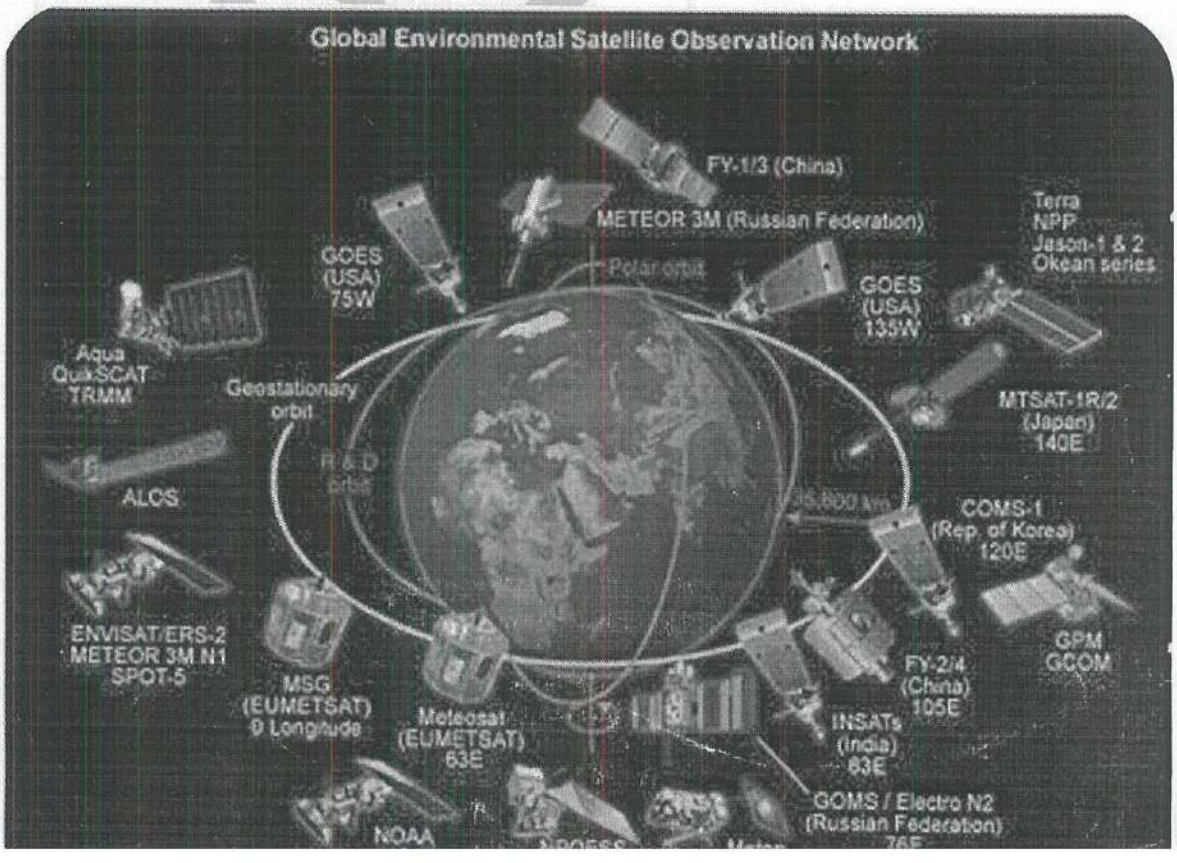
7. Evaluation scheme

Evaluation scheme:

Evaluation of This Diploma IS based on five internal assessments, Two quarter exams and final examination marks. Overall performance will be calculated different parameter like: Attendance, Attitude, presentation and overall performance in the whole year.

Reexamination Policy: NETRA will give you two attempts for completions of Diploma. Institute reserves the right to change the rules and regulation according to need.



- NPNT Drone

Evaluation scheme:

Evaluation of This Diploma IS based on five internal assessments, Two quarter exams and final examination marks. Overall performance will be calculated different parameter like: Attendance, Attitude, presentation and overall performance in the whole year.

Reexamination Policy: NETRA will give you two attempts for completions of Diploma. Institute reserves the right to change the rules and regulation according to need.

Assignments-PGDGI

1. **GIS Assignment**

- Base Map preparation from open source data of your own district.
- Thematic mapping with the help of Census data of your own district.
- Village Map preparation of native place
- Thematic mapping of your own district.
- Minor/major project report

2. **Photogrammetry Assignment**

- Feature database file of point of sharp and medium undulation
- Regular interval Mass points, 50 and 100 by name
- Hard break lines and soft break lines on sharp and medium undulation
- DTM feature extraction photogrammetric techniques
- Complete DTM and Planimetry Model preparation

3. **Remote sensing Assignments**

- Preparation of Data Input for RS based LULC
- Image classification by unsupervised method
- LULC cover Map preparation by supervised techniques
- Vegetation health monitoring by NDVI techniques
- Spatiotemporal analysis with the help of RS technology

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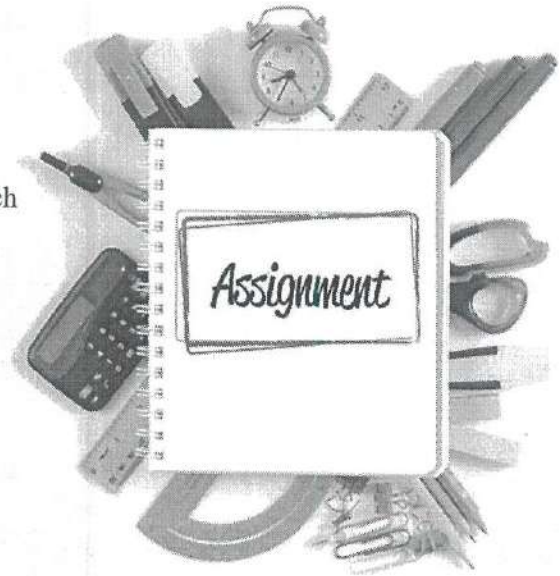
4. **Digital image Processing**

- Radiometric corrections of Satellite data
- Geometric corrections of Satellite data
- Image enhancements techniques
- Band Rationing
- PCA and Image filtering, Image contrast stretch



5. **LiDAR /GPS Assignments**

- Coordinate collection from MAP INR
- Map composition from Map INR
- Data collection by 500 radios

1.2.2 / 1.2.3

NETRA INSTITUTE OF GEOINFORMATICS MANAGEMENT & TECHNOLOGIES FOUNDATION

NETRA

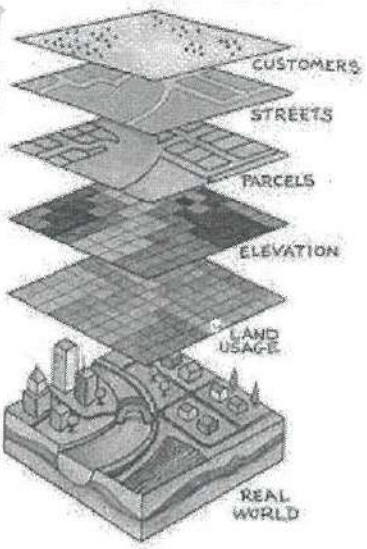
Syllabus for Post Graduate Diploma in Geo-Informatics (PGDGI)

PGDGI-101: Geographical Information System

Unit 1: Fundamentals of Geographical Information System

THEORY CONTENTS

- Introduction and objectives of GIS
- Basic concepts about spatial information system
- Concept of Geo-Informatics
- Historical development of GIS
- Components of GIS, Hardware and Software requirement for GIS
- Introduction to Computer system and its components; Terminology of GIS
- GIS data formats
- GIS Functionality



PRACTICAL CONTENTS

- Interaction with different software's of GIS
- GIS data Collection from open sources
- Georeferencing of images and Toposheet
- Layerization with GIS elements
- Projection and coordinate of shapefile
- Working with GIS layers with open sources software's

Unit-II: Data Structure and Data Models

THEORY CONTENTS

- Introduction and Objectives of GIS Data Model and Structure
- GIS Data Types
- GIS Data Models, Raster Data Model and Types, Vector Data Models and Types
- Introduction and objective to DBMS
- DBMS models
- GIS data Structure
- Object Oriented Data Model

PRACTICAL CONTENTS

- Download shape file (administrative, road , railways) from open sources
- Data collection for GIS based Mapping
- Use of Geoprocessing Tools
- Prepare Base Map using open source data
- Attribution of GIS layers

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Unit-III: Spatial Data Input

THEORY CONTENTS

- Objectives & Methods of GIS data inputs
- Shape of the earth, Datum, Geoid, Ellipsoid and spheroid,
- Coordinate and Projection System of GIS data
- Introduction and objectives of Map Projection; Classification of Map Projection,

- GIS Data Registration
- Editing& Cleaning of Vector data. Topological rules; Errors and Accuracies in
- Error in GIS data

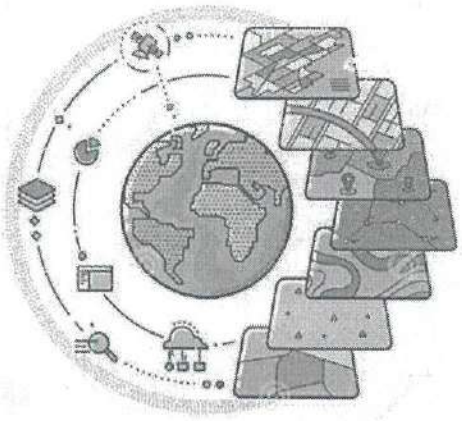
PRACTICAL CONTENTS

- GIS data conversion / Importing and exporting of data from one to another platforms
- GIS data linking (spatial and Non-spatial)
- Different ways of Attribute Generation
- Topology building
- GIS Data conversion for various platforms

Unit-IV: Data Storage

THEORY CONTENTS

- Geospatial Data Storage
- Data storage formats
- GIS data management
- Applications & Usage of Compression and Decompression.



PRACTICAL CONTENTS

- GIS data storing in different DBMS formats
- Making Digital database /Making Geodatabase of Land Records
- Generating DEM, contours and other 3D data
- Land use and Land cover Mapping and data base creation
- Query building on DBMS

Unit-V: Manipulation Analysis and Output

THEORY CONTENTS

- Introduction and objectives of data manipulation;
- Multi criteria Analysis (MCA)
- Overlay operations; Query building ;Overlay analysis
- Proximity analysis/Buffer analysis
- Introduction and methods of Interpolation analysis; Impact assessment;
- Watershed analysis
- Network analysis
- Site suitability analysis
- Factor and weightage analysis
- Map Designing/Composition: Map elements and Map composition, Types of Maps – Thematic, Dot, and Chorcpleth etc.

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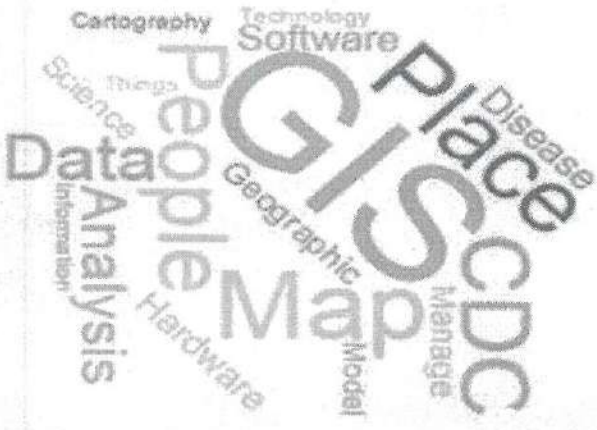
PRACTICAL CONTENTS

- Interpolation Techniques
- Map Composition (Thematic Mapping)
- Base Map generation techniques for surveying
- Proximity Analysis
- Overlay analysis
- Site Suitability analysis
- Network analysis
- Watershed analysis



Books
Lo CP& Yeung AKW, 2004. Concepts and Techniques of GIS, Prentice. Heywood I, Conelius S, Carver S. 2000. Introduction to GIS. Addison.Burrough P.A. and Rachael A. McDonnell. Principles of Geographic
Hall of India, New DelhiWesley Longman, New YorkInformation Systems, 2nd Ed.Masood AS, 2006. Introduction to GIS, AllahabadFazal S & Rahman A, 2007. GIS Terminology, New Age InternationalPublishers, New DelhiLeick A. 1995 GPS Satellite Surveying, 2nd Edition, John Wiley and Sons

PGDGI-102: Digital Photogrammetry

Unit 1

THEORY CONTENTS

A. Basic of Photogrammetry-

- Introduction and objectives of Photogrammetry,
- Historical development of Photogrammetry, Definition term and limitations,
- Types of aerial photographs,
- Fundamental concept and basic information and specification of Aerial photography.

B. Aerial camera:

- Introduction and objectives of Aerial camera, Metric camera
- Types of aerial camera (film camera, digital camera and active sensors)
- Camera calibration for Aerial Photography
- Aerial film and types of aerial camera lenses and lens distortions
- Aerial project and mission planning, project definition and designing, GPS supported photography
- Camera selection, camera calibration, Film format and annotation

PRACTICAL CONTENTS

- Introduction of Photogrammetric software
- Handling Tools and menu bar of Photogrammetric software
- Loading Projects and model selection
- Study of 3D models
- Practice of depth perception
- Making FDB files
- Height perception
- Extracting coordinate (XYZ) precisely

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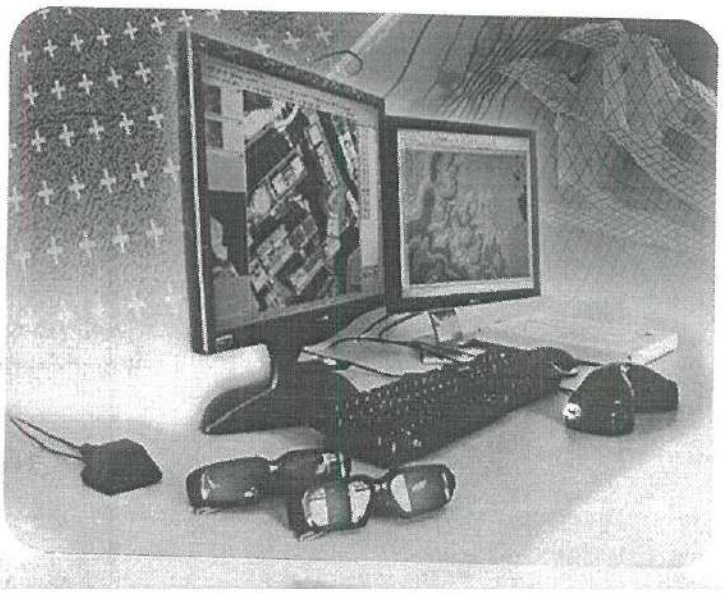

Unit 2

THEORY CONTENTS

A. Geometry of Aerial Photographs-

- Introduction about Geometry of Aerial Photographs,
- Projection and properties, Central and orthogonal projection,
- Concept of Tilt, Drift, crab, swing, Flight line, fiducially marks and fiducially axis, principal point, conjugative principal point, Air base and ground base, and perspective center.
- Overlapping on Aerial Photographs and their types,
- Photogrammetric workflow.
- Photogrammetric platforms.

B. Mathematics of Photogrammetry-

- Geodetic coordinate system, latitude and longitude,
- Two-dimensional coordination system,
- Datum: three dimensional transformations,
- Map projection: two dimensional transformations.
- Basic of image (single image, pair of images, image triplet)
- Positional and rotational elements

PRACTICAL CONTENTS

- Making DTH file
- Depth perception test by DTH (hilly/plane areas)
- Depth perception test by TIN (hilly/plane areas)
- Depth perception test by contours (hilly/plane areas)
- Testing of depth perception by Interactive terrain Edit Mode (ETE) (Hilly/plane areas)
- Testing of depth perception by Interactive terrain Edit Mode (ETE) (Hilly/plane/semi undulation areas)

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Unit 3

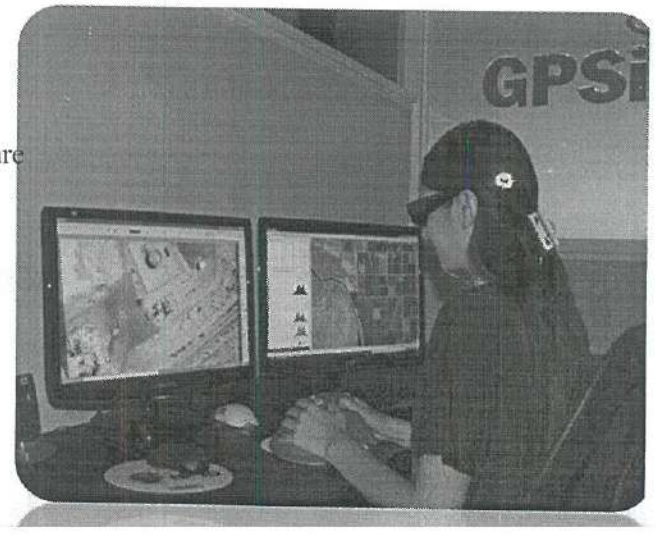
Techniques of photo and image Interpretation-

THEORY CONTENTS

- Introduction and objectives of interpretation
- Basic Elements of Air Photo Interpretation of satellite image interpretation, Recognition elements: Tone, Color, Texture, Pattern, Shape, Size and associated features.
- Photo and Map Scale
- Accuracy, error and precision.
- International Accuracy standard (NMAS)

PRACTICAL CONTENTS

- Model Setup by using Sup/.prj/Images
- Interaction with Micro station
- Adding Micro Station with Photogrammetric Software
- Concept of hard breaklines
- Concept of Soft breaklines
- Height testing with hard breaklines
- Height testing with soft breaklines



Unit 4

THEORY CONTENTS

A. Stereo Photogrammetry-

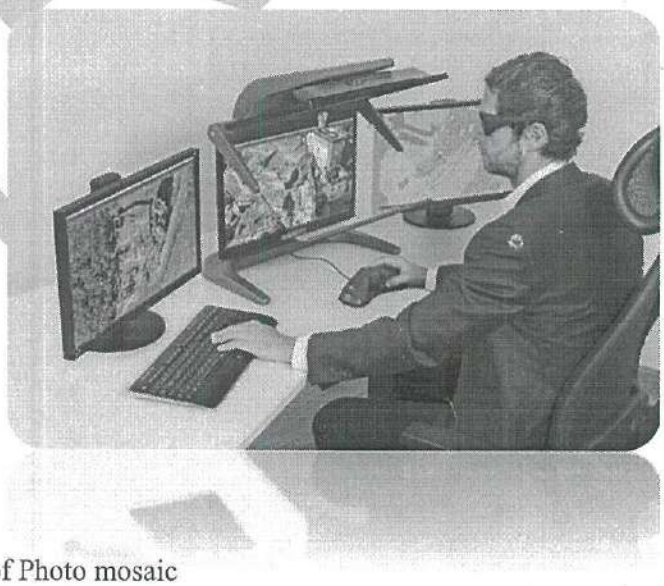
- Introduction and objectives of Stereo Photogrammetry
- Digital Photogrammetry, and Stereo scope vision Stereo model
- Model formation
- Orientation and their types (Interior and Exterior orientation)
- Aerial triangulation and its advantages. Bundle block adjustment
- Image rectification

B. Digital photogrammetric work station:

- Introduction and objectives of Digital Photogrammetry
- Digital photogrammetric work station
- Generating geospatial datasets, DEM and orthophoto
- Automated feature measurement for geospatial applications

PRACTICAL CONTENTS

- DTM feature extraction
- Road/wash/Drainage Extraction
- Test of Road/wash/Drainage coordinate (XYZ)
- 3D model extraction with hard breaklines
- 3D model extraction with soft breaklines
- 3D model extraction with hard and soft breaklines



Unit 5

Applications of Photogrammetric products-

THEORY CONTENTS

- Concept of Mass points and Break lines,
- Contours and their types, Volumetric Analysis,
- Concept of DEM, DTM, TIN, GRID and DSM
- Aerial Photo mosaic, advantage and disadvantage of Photo mosaic
- Photogrammetric product and its application
- Ortho photo and their applications
- Applications of Photogrammetric products for mapping and planning

PRACTICAL CONTENTS

- Linear feature above-ground feature extraction
- Line feature extraction
- Polygon feature extraction
- Point feature Extraction
- Complete planimetry feature extraction

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- Complete DTM feature extraction
- Complete DTM and Planimetry feature extraction

Books

American Society of Photogrammetry, Manual of Remote Sensing, 2nd ed, Falls, American Society of Photogrammetry, Multilingual Dictionary of Remote H.M., Wilson, Topographic Surveying, John Wiley and Sons, New York. Church, Va., 1983Sensing and Photogrammetry, Falls Church, Va., 1984
Wolf, P.R. 1983.Elements of Photogrammetry, 2nd ed, McGraw-Hill, NewYork . Rampal KK. 1996. Handbook of Aerial photography and Interpretation. Concept publishing company, New Delhi

PGDGI-103: Fundamentals of Remote Sensing

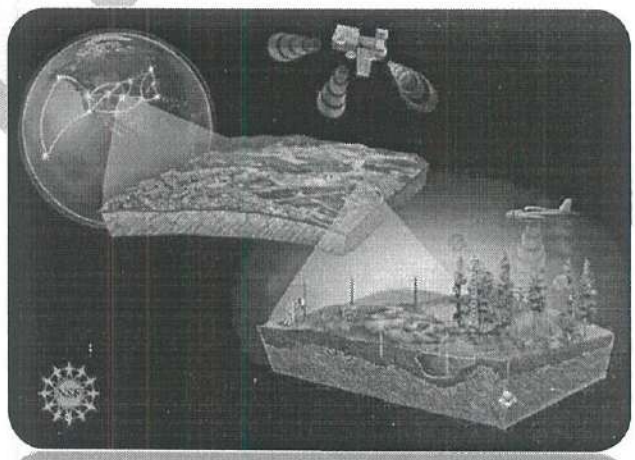
Unit-1: Basics of Remote Sensing

THEORY CONTENTS

- Definition and scope of Remote Sensing
- Satellite remote sensing v/s aerial photography
- Data acquisition
- Stages of remote sensing
- Historical development of remote sensing, Remote sensing data
- Types of Remote Sensing

PRACTICAL CONTENTS

- Download Satellite Image from open sources
- Interaction with Remote sensing Software
- Import and Export satellite Image
- Meta examine
- Blending, swipe and flicker
- Band Combination
- Study of Satellite images (true and false)
- Layer Stacking



Unit-2: Physics of Remote Sensing and EMR Interactions

THEORY CONTENTS

- Electromagnetic radiation (EMR)
- EMR quantities: energy, radiant flux, irradiance, existence, solid angle, radiant intensity radiance, quantities
- Radiation laws: Planck's, Stefan's Boltzmann and Kirchhoff's laws
- Interaction with atmosphere: atmospheric haze, scattering and contrast reduction
- Interaction with earth surface
- Spectral signature, hemispheric reflectance, transmittance and absorption
- Image Enhancement Techniques

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PRACTICAL CONTENTS

- Study of Spectral/Surface Profile
- Subset Image/ Masking
- Mosaic Image
- Data preparation for Classification
- Atmospheric correction (Natural color)
- Image enhancement techniques

Unit-3: Platforms and Sensors and Resolutions

THEORY CONTENTS

- Platforms: ground base, air borne, space borne
- Sensors: definitions and CCDs; Types of sensors: optical, thermal and microwave
- Sensor systems: whiskbroom and push broom
- Sensors used in IRS; Landsat; SPOT satellites
- Resolutions: spatial, spectral, temporal and radiometric

PRACTICAL CONTENTS

- True Color Composition (TCC) of Landsat data
- Image Transformation
- Radiometric correction
- Display of histogram and pixel data of digital image
- Pan sharpening Image

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Unit-4: Earth resource satellites

THEORY CONTENTS

- Definitions and characteristics,
- Sun-synchronous and geostationary satellites,
- Indian Remote Sensing Satellites (IRS) series, LANDSAT series, SPOT series, IKONOS and Quick bird etc.
- high Resolution satellite
- Satellite data types: FCC and PAN

PRACTICAL CONTENTS

- Making Signature file
- Supervised Classification
- Unsupervised Classification
- Generating NDVI, NDBI, NDWI
- Making land use Land cover

Unit-5: Image Interpretation

THEORY CONTENTS

- Image interpretation: manual interpretation v/s digital image processing;
- Elements of image interpretation
- Factors affecting image interpretation;
- Image interpretation keys
- Multispectral concept in image interpretation

PRACTICAL CONTENTS

- Model Maker
- Slope and Aspect
- Land Surface Temperature (Using Erdas Imagine and QGIS)

Books:

American Society of Photogrammetry, Manual of Remote Sensing, 2nd ed.,Falls Church, Va., 1983American Society of Photogrammetry, Multilingual Dictionary of Remote Sensing and Photogrammetry, Falls Church, Va., 1984.Lillesand T M &Keifer R W 2000. Remote sensing and Image Interpretation, IV th Eds. John Wiley & Sons, New York Joseph George 2003. Fundamentals of Remote Sensing, University press. Hyderabad Sabins, F. 1986, Remote Sensing: Principles and Interpretation, Freeman,
New York. Rashid S M &Mazhar A K, 1993 Dictionary of remote sensing, Manak Publishing House, Delhi

PGDGI-104: Global Positioning System

Unit 1 Fundamental of GPS

THEORY CONTENTS

- Introduction of Global Positioning System,
- Satellite constellation,
- GPS signals and data,
- Geo-Positioning
- Basic concept of NAVSTAR and GLONAS

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PRACTICAL CONTENTS

- XYZ coordinate extraction from Open Sources Software's

- Using GCPs for Georeferencing
- Interaction with GPS software's
- Handling MAP INR Tools

Unit 2 Geodesy and Surveying

THEORY CONTENTS

- Introduction of geodesy
- Fundamental of Surveying
- Geoid/Datum/Ellipsoid, definition and basic concepts,
- Coordinate system and their types
- Map Scale, Scale factors
- Integration of mapping & Surveying

PRACTICAL CONTENTS

- Ground data collection from MAP INR
- Checking accuracy of GPS coordinate
- Importing GPS surveying data in GIS platform
- Map making Maps from Collected Data set

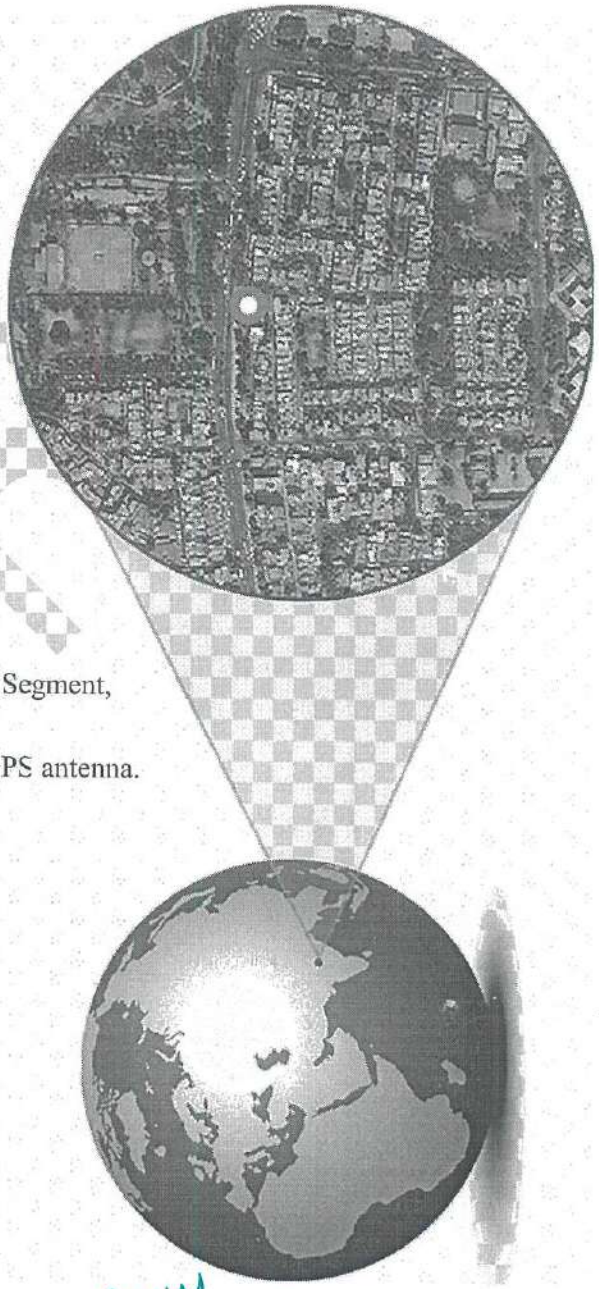
Unit 3 GPS Components

THEORY CONTENTS

- Historical evolution and need for GPS
- GPS Segments: Control Segment, Space Segments, User Segment,
- GPS Positioning Types
- Absolute Station Equipment: GPS receiver & its types, GPS antenna.
- Surveying With GPS

PRACTICAL CONTENTS

- Transferring data from GPS receiver to PC
- Plotting of GCPs on image and maps
- GCP planning for mapping and Surveying Projects



Unit 4 GPS Accuracy & Affecting Factors

THEORY CONTENTS

- GPS Accuracy
- DGPS accuracy
- Factor affecting the GPS data
- RTK (Real Time Kinematics),
- GPS Signal errors
- Satellite Geometry
- DOP (Dilution of Precision)
- Satellite signals and its strength,
- Radio frequency (RF), Loss of Radio Transmission from base

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- Improving GPS Accuracy

PRACTICAL CONTENTS

- Checking Accuracy of Data by collecting GCPs in Different ways
- Creating Shapefile from GCPs
- Manual Correction of collected Data by DGPS

Unit V: GPS Applications

THEORY CONTENTS

- Applications of GPS; Surveying and Mapping
- Navigation, Integrating GPS with Remote Sensing and GIS
- Military applications L.B (Location Based Service)
- Mobile Mapping
- Vehicle tracking, Seismic application
- Crystal deformation and tectonic movements

Practical Contents

- Use of GPS data for Surveying and mapping purpose
- Use of GPS coordinate for making buffer 2km and collecting spatial data for planning and Decision making.

PGDGI-105: Digital Image Processing

Unit-1: Introduction to digital image preprocessing

THEORY CONTENTS

- Introduction and Objectives of Digital image Processing
- Digital images & analogue images: differences, advantages and disadvantages
- Analogue & digital signals

PRACTICAL CONTENTS

- Image enhancement techniques: Histogram equalization and display
- Contrast enhancement
- Edge Enhancement
- Edge Detection Methods
- Linear & Non-linear stretching

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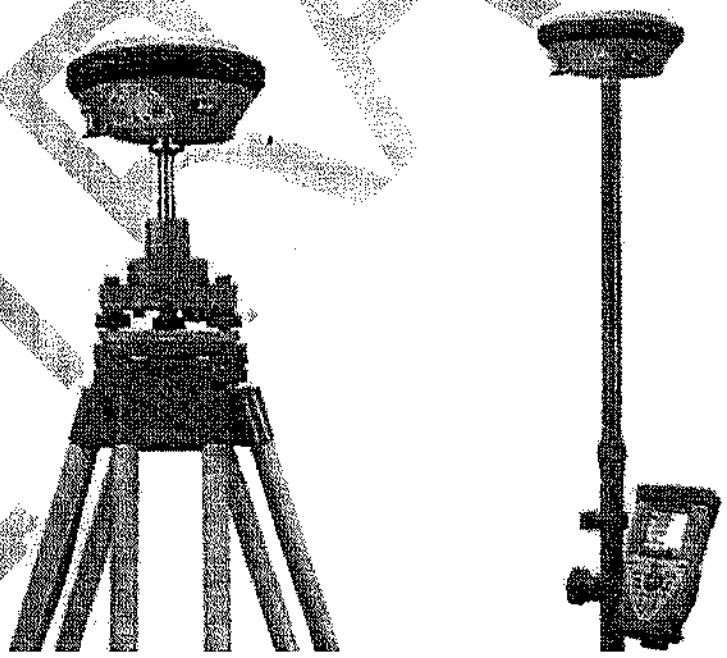
Unit-2: Image Restoration

THEORY CONTENTS

- Introduction
- Display of digital images;
- Digital data formats: band sequential format (BSQ), band interleaved by line (BIL) and band interleaved by pixel (BIP) color composites;
- Data conversion: analogue to digital;
- Ground control points (GCPs);
- Geometric, radiometric and atmospheric corrections.

PRACTICAL CONTENTS

- Image Filtering: Low pass and high pass filters
- Density slicing
- Resolution Merge
- Image fusion



Unit-3: Image Enhancement

THEORY CONTENTS

- Contrast stretching: linear and non-linear;
- Image filtering: high pass and low pass filter
- Image convolution
- Image filtering
- Image smoothing
- Image Transformation
- Density slicing and HSI
- Image convolution
- Principal component analysis (PCA)
- Image Fusion

PRACTICAL CONTENTS

- Principal component analysis (PCA)
- Tasseled cap analysis (TCA)
- Image classification: Unsupervised and supervised techniques
- Classification algorithm: Maximum likelihood, Ground validation of classified data
- Minimum to mean distance and nearest neighborhood, training sets for image classification
- Resolution merge techniques

Unit-4: Image Classification

THEORY CONTENTS

- Introduction and objectives of image classification
- Information classes v/s Spectral Signature
- Supervised and unsupervised classification: advantages v/s disadvantages
- Image Classifiers
- Classification algorithm: parallelepiped, minimum distance to mean and maximum likelihood

PRACTICAL CONTENTS

- Accuracy assessment

- Area calculation for different classes
- Vegetation Indices: Vegetation index (VI), normalized differential vegetation index (NDVI)
- Water indices: water index (WI) and normalized differential water index NDWI

Unit 5: Accuracy Assessment

THEORY CONTENTS

- Introduction and Objectives of Accuracy Assessment
- Reference / Ground truth data
- Error Matrix
- Thematic Accuracy
- Location Accuracy
- Classification accuracies: producer, user and kappa
- Change detection techniques

PRACTICAL CONTENTS

- Land Surface Temperature (LST)
- Pre-processing of Sentinel-1 Imagery
- Multi-temporal mosaic of Sentinel-1
- Accuracy assessment of Classified data
- Ground Truthing on doubtful areas

PGDGI-106: LIDAR

Unit - 1 Fundamental of LiDAR

THEORY CONTENTS

- Introduction and objectives of LiDAR
- Basic Concept of LiDAR technology
- What is LiDAR Technology?
- Historical development of LiDAR technology
- LiDAR platforms (terrestrial, aerial and Space)

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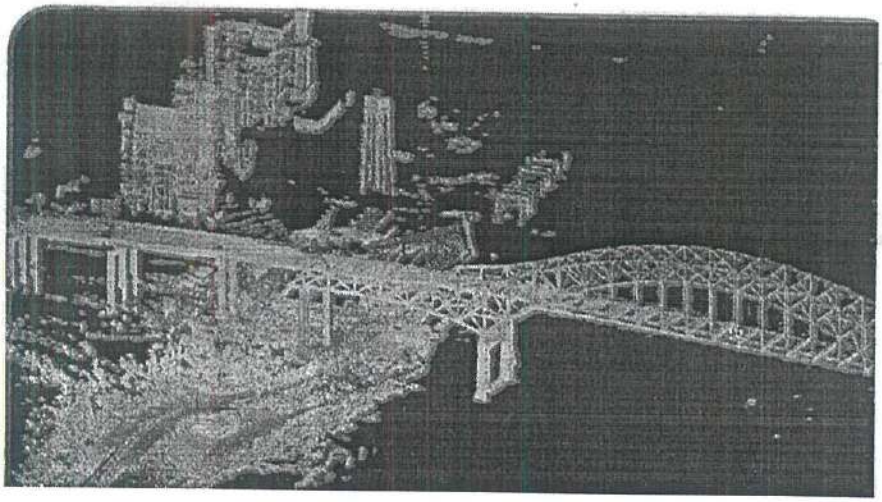
PRACTICAL CONTENTS

- LiDAR data Processing Software interaction
- Working with LiDAR processing software
- Handling Terra tools
- Making GIS layers (point line polygon)
- Vectorization on raster surface image



Unit 2- Principle of LiDAR technology

THEORY CONTENTS

- Principle of LiDAR Technology
- Types of LiDAR data
- Basic architecture of LiDAR technology
- Transmitter
- Receiver and
- Control system
- Latest laser scanners

PRACTICAL CONTENTS

- Interaction with terra tools
- Working with terra model
- Working with terra scan
- Working with terra photo
- Study of PTC file, and Function key
- Cross section and their types
- Power line classification phase 1 (Project 2)

Unit 3- Data Acquisition and Calibration

THEORY CONTENTS

- LiDAR System
- System Specification
- Data Storage
- Data Acquisition consideration
- Software for Quality Assessment

PRACTICAL CONTENTS

- Quality improvement techniques
- Power line classification phase 2
- Building classification
- Quality improvement techniques

Unit 4- LiDAR data processing

THEORY CONTENTS

- Introduction and objectives of LiDAR data processing
- Preprocessing
- Post processing
- Products of LiDAR application
- DEM,DTM,DSM
- Source of Errors in LiDAR data

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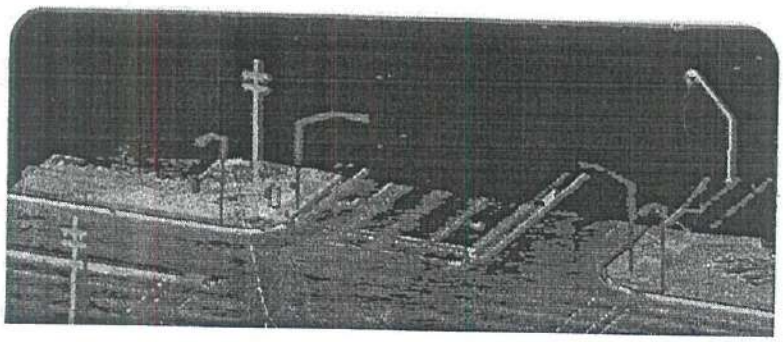
PRACTICAL CONTENTS

- Catenary work on power line projects
- Quality improvement techniques
- Ground data classification (Project 2)
- Quality improvement techniques

Unit 5- Application of LiDAR technology

THEORY CONTENTS

- Application of LiDAR for mapping and planning
- LiDAR for volumetric analysis
- LiDAR application for power sector
- Application of LiDAR for smart city
- LiDAR application for Topographical study



PRACTICAL CONTENTS

- Contour generation
- DTM Extraction
- Ground and above ground feature extraction

Books:

CP LO &Yeung AKw, 2004. Concepts and Techniques of GISs Prentice-Hall of Indian, New Delhi Heywood I, Cornelius S, Carver S. 2000. Introduction to GIS. Addison Wesley Longman, New York Burrough P.A, and Rachael A. McDonnell. Principles of Geographic Information Systems, 2nd EdMasood AS, 2006. Introduction to GIS, Allahabad Pazal S & Rahman A, 2007, GIS Terminology, New Age International Publishers, New Delhi Leica A. 1995 GPS Satellite Surveying, 2nd Edition, John Wiley and Sons Leicka. A. GPS Satellite Surveying, John Wiley & Sons, New York. Terry-Karen Steede, 2002, Integrating GIS and the Global Positioning System, ESRI PressN.K.Agarwal, Essentials of GPS, Spatial Network Pvt Ltd 2004. 4. Sathish Gopi, GPS.

PGDGI-105: DRONE /Unmanned aerial vehicle (UAV)

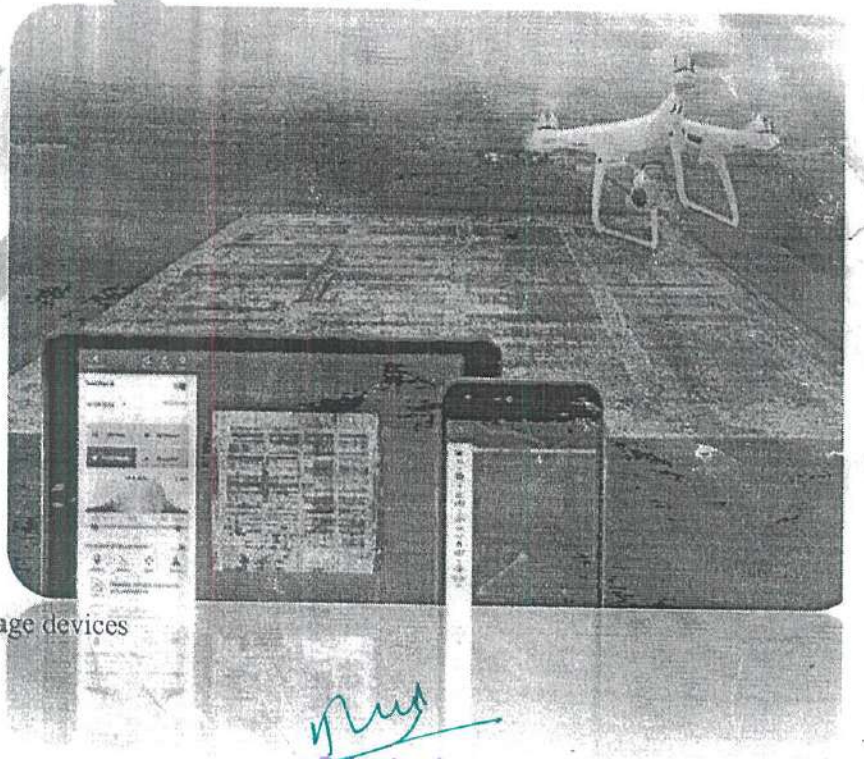
Unit 1 Fundamentals of Drone

THEORY CONTENTS

- Introduction of Drone
- Vocabulary terminology used in Drone- Gravitational force and thrust etc.
- Components of Drone
- Working principle of Drone and electronic components,
- Types of Drone; Multi-copter, Quad copter, Hexa copter etc. Fixed wing drone, V-Tol
- Mapping Drones etc.

PRACTICAL CONTENTS

- Handling Drone
- Interaction with Drone Application
- Interaction with Drone components
- Study of different basic elements of Drone
- Use of controlling operation
- Understanding Check list



Unit 2 Drone Maintenance

THEORY CONTENTS

- Assembling a Drone
- Energy source, Autonomy,
- Onboard storage capability, removable storage devices
- Camera and camera calibration
- Payload calibration and balancing
- Fundamental of Remote control (RC)
- Drone Endurance
- Flight planning and with Use of advance apps
- Sensors/IMU calibration
- Drone battery, Charging, Storage etc.

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PRACTICAL CONTENTS (Indoor practical's)

- Linking Drone with Mobile application
- On-board working
- Camera calibration
- GCP planning

Unit 3 Flight Planning

THEORY CONTENTS

- Introduction and objectives of mission planning
- Flight planning (Pre-flight, In-flight and Post-flight),
- DGPS signalization, Integration of DGPS data and Drone data,
- Potential uses of Drones
- Drone Image metadata/ Data Collection
- Importing Camera parameters

PRACTICAL CONTENTS (outdoor practical's)

- Area selection for Flying the Drone
- Take-off and landing Drone
- Pre-flight Check list
- Flight/Mission planning
- Manual flying and Autonomous flying
- Important safety Protocols
- How to cover in mid-air and land your drone
- Flying your Drone left/right and forwards/backwards
- How to pilot your Drone in a square pattern
- How to fly a Drone in a circle
- How to rotate Drone during flying
- Flying a Drone continuously (linear way)

Unit 4 Applications of Drone

THEORY CONTENTS

- Application of Drone in agriculture,
- Mapping and surveying, Disaster management,
- Inspection of transmission line and power distribution,
- Film Industry uses

PRACTICAL CONTENTS

- Flying Drone with different mobile app as per requirements
- Fundamental of Drone data processing software's
- Importing Drone Images in Desktop
- Running the Process for making Ortho Mosaic
- Working with cloud points
- Generating different Mapping products from Drone data inputs

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Unit 5 Rules and Regulations for Flying the Drone

THEORY CONTENTS

- Safety risk
- Guidelines to fly Drone safely
- Drone Licenses
- Aviation regulation

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Prof. Nivedita Kumari
Principal

Principal - **9520886032**
IQAC-CO - **9520886033**
Chief Adm. - **9520886031**
E-mail : **rgpgcollegemrt@gmail.com**
Website : **https://rgcollege.ac.in**
Facebook ID : **Raghunandini Rgpg Meerut**

Certificate 1.2.2

This is to certify that the courses mentioned in 1.2.2 are not a part of the Syllabus/ Curriculum and are out of syllabus program of affiliating University.

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Principal - **9520886032**
IQAC-CO - **9520886033**
Chief Adm. - **9520886031**
E-mail : **rgpgcollegemrt@gmail.com**
Website : **https://rgcollege.ac.in**
Facebook ID : **Raghunandini Rgpg Meerut**

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