

# Computer Hardware & maintenance

**Objective:** This paper is aimed at providing students with a comprehensive understanding of the basic components used in the basic assembly and their functions.

## Unit -I:

Computer Fundamentals, Operating Systems, Application Software, GUI and CUI, verview of some Application software , Different Hardware devices, Input Devices, Processing Devices, Output Devices, Working of input and output devices, Assembling.

## Unit -II:

Partitioning of Hard Drive/ SSD - Primary, Extended, Logical partitions using Partition Tools in Windows. Partitioning of Hard Drive/ SSD - Primary, Extended, Logical partitions using Partition Command prompt.

## Unit - III:

Installation of Operating Systems like Windows 7, Windows 8 etc., Installation of Several Application Software like MS- office, Introduction to Viruses: Virus definitions, Virus Detection, Prevention and, Antivirus Utilities, Installation of Various Devices and Drivers, Updating and Upgrading of System.

## Unit- IV:

Knowledge of Network Topologies, Networking Devices, Transmission Media, Sharing of resources. Knowledge of Internet & Internet Network Configuration.

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# Ornamental Fish Culture & Management

F.M-60 80420

## UNIT-1:- Introduction:-

Scope of ornamental fish culture, Types of ornamental fishes (marine & fresh water), Economic importance, World trade of ornamental fish and export potential varieties of exotic and indigenous fishes.

### Aquarium & Accessories:-

Principle of balanced aquarium, setting of aquarium, Accessories, Aeration & filtration unit, Food/Feed production unit.

## UNIT-2:- Fish breeding and application of biotechnology & genetics in fish breeding:-

Breeding and rearing of ornamental fish, Breeding of live bearer, breeding of egg layers, Pond fish keeping, Broodstocks management. Construction of tank, Stocking.

## UNIT-3:- Food, Feeding & Diseases:-

Culture of live food organism (Collection & culture of infusoria, Daphnia, Tubifex, Blood worm), Preparation of artificial feed (Formulated feed & Types of feed), Common diseases & their control measure, Bacterial, Protozoan, Fungal & Parasitic diseases & their prophylactic measures.

## UNIT-4:- Management & Marketing:-

Water quality management, water filtration system- biological, mechanical and chemical. Aquarium plant management, Management (conditioning, packing, transport and Quarantine methods, Co-operatives, Networking.

## UNIT-5:- Project: - (30 marks)

Life cycle, breeding and feeding behaviour of commercially important live bearers, egg layers & ornamental fishes.

Visit to ornamental fish farm (10 marks).

### Suggested readings:-

1. Aquarium fishes
2. Hand book of fresh water Ornamental fishes
3. Profitable fish keeping
4. Guide to fish Breeding
5. Aquarium fish keeping
6. Aquarium management
7. Aquarium Plants

Jena Burton  
S.Mathur, L.L. Sharma & A.K.Mathur  
Guy N. Smith  
Chris Andrews  
C.L.S. Srivastava  
Amita Saxena  
J. Schmidt

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# Digital Marketing Syllabus

## DIPLOMA IN DIGITAL MARKETING (DDM)

### ✓ BASICS DIGITAL MARKETING

- Introduction To Online Digital Marketing
- Importance Of Digital Marketing
- How did Internet Marketing work?
- Traditional Vs. Digital Marketing
- Types of Digital Marketing

### ✓ SEARCH ENGINE OPTIMIZATION

- On-page SEO (on-site SEO)
- Off-page SEO (off-site SEO)
- Technical SEO
- Local SEO

### ✓ SEARCH ENGINE MARKETING

- Pay-Per-Click (PPC)
- Sponsored Search Results;
- Local SEM
- Organic SEM.

### ✓ WEB MARKETING

- Display advertising
- Web banner advertising
- News Feed Ads
- Content marketing

### ✓ SOCIAL MEDIA MANAGEMENT

- How to manage social media
- Facebook Management
- Twitter Management
- Increasing Engagement
- Hashtags

### ✓ WEB & INFOGRAPHIC DESIGN

- Basics of Web Design
- Basics of Wordpress
- HTML / CSS Basics
- Website Hosting
- Domain Management
- Basics of Canva
- Basics of Poster My Wall

### ✓ INTERNET AND WEB OPTIMIZATION

- Content Delivery Network
- Website Hosting
- Website Optimziation
- Image Optimization
- Gzip Optimization

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**SYLLABUS FOR ADD ON COURSE**

**"OFFICE MANAGEMENT"**

Theory marks: 50    Practical :50 Marks

Duration: 30 hours

**Learning Objective :**

- To enhance the skill in Office works and leadership
- To enhance the skill in supervision and functionalities

**UNIT-1: OFFICE AND ITS FUNCTION**

What is business enterprise? What is an office Executive ? Who are office staff? What are the most common forms of Business Organization? What are the advantages of office work? What are the categories of office career and job classification under each category? What are the specific skills requirement for office jobs? Duties and responsibility of officer staff.

**UNIT-2 RECORDS MANAGEMENT**

Objectives of record keeping , what is filling? What are the different types of filling system? Steps in filling, indexing: selecting the appropriate filing system, How to handling incoming and outgoing mails.

**UNIT-3: DOCUMENTS AND REPORT WRITING:**

Key Pints to write a document: the 5W-H plan for writing, steps in writing work place documents, important document to remember when editing seven layout mistakes to avoid: quick tips to write a report, Basics of Meeting.

**UNIT-4: SUPERVISORY SKILL & MS OFFICE**

What are the skill of supervisor and how to acquire them? Functions of supervisor. Communication

Meaning: Process, communicating Tools: Types, Barriers.

MS OFFICE: Reporting in MSWord, Calculation in MS Excel, PPT for office meetings

**UNIT-5: LEADERSHIP AND MOTIVATION:**

Meaning and concept: Importance of leadership, qualities of a leader: relationship and differences leadership and motivation: organizational leadership, Leadership ethics-traits of and ethical leader, leadership styles- important leadership style-situational leadership- Emotional Intelligence of Leader: which leadership styles of subordinate development.

**ELIGIBILITY:**

ALL UG AND PG PROGRAMME STUDENTS

**SIGNATURE OF THE MEMBERS**

1. Chandray Prasad Kumar  
2. Manoranjan Samant  
3. Swadesh Kumar  
4. Kumar

**CERTIFICATION :**

AFTER SUCCESSFUL COMPLETION

5. Gaurab Kumar Mishra  
6.  
7. Anil Kumar Ray  
8.

  
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SYLLABUS FOR ADD-ON COURSE

**"E-FILLING OF TAXATION"**

THEORY-50 MARKS PRACTICAL-50 MARKS

DURATION -30 HRS.

**SYALLABUS**

Learning Objective :

1. Introduction-Accounting
  2. Introduction on Tally prime
  3. Administration of Company-Tally prime
  4. Masters Creation-Accounts and inventory
  5. Voucher Creation and order processing
  6. Tally Features- Valuable Applications
  7. Statutory and Taxation Features in Tally Prime
  8. Payroll in Tally Prime
  9. GST Management System(GMS)
  10. Components of Goods and tax structure
  11. Designing e-pay in Computerized Accounting System
  12. Using e-filling Package and adjustments of I/O tax and reports
  13. Introduction on income and tax
  14. Income Tax Returns(ITR)
  15. E-filling of Income Tax Return
  16. E-Verification of IT
  17. From 26a(Annual Tax Statement) 26AS / AIS
  18. From 10E(Tax Relief u/s89)
  19. Income Tax Calculator(E-Tax Calculator)
  20. E-Pay Tax
- To enhance the skill in e-accounting
  - To enhance the skill in e-filling of Income tax and GST

**ELIGIBILITY:**

ALL UG AND PG PROGRAMME STUDENTS

**CERTIFICATION :**

AFTER SUCCESSFUL COMPLETION

**SIGNATURE OF THE MEMBERS**

1. Manoj Kumar Senuapati  
2. Swadish Kumar  
3. Ramesh Kumar

5. Sushil Kumar  
6.

7. Anil Kumar Das  
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4. Santosh Kumar Mishra

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S. Kumar

Head Dept. of Commerce  
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## **Syllabus for Computer Literacy Programme**

### **Unit – 1 Introduction to Computers**

- What is a computer
- Characteristics of Computer
- Classification of Computers
- Components of Hardware
- Input Device
- Output Device
- Storage Device
- Booting process of Computer
- Operating System - Windows 7/10
- My Documents – Folder, File, Copy, Paste, drag, drop

**Exercise- Create a Folder, File, Cut, Copy, Paste, File Transfer, Rename etc.**

### **Unit – 2 Microsoft Word**

- Introduction To Microsoft Word
- Template
- Edit and Proof
- Add text
- Formatting text
- Working with Table, Chart and Excel Spreadsheet in MSWord
- Page setup and Print Document
- Frequently Used Shortcuts

**Exercise- Create a word document and print it.**

### **Unit – 3 Microsoft Excel**

- Introduction to Microsoft Excel
- Overview of Workbooks
- Moving Around Worksheets
- Formatting Cells and Cell Contents
- Activating a Worksheet
- Filter data

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- Data Table
- Count and Sum Function
- Creating Charts
- Page Layout view

**Exercise-** Create an excel file, add new sheet, and using function command to solve a problem.

#### **Unit – 4Power Point and Internet**

- Introduction to PowerPoint
- Starting Presentation in PowerPoint
- Modifying a Presentation
- Working with Slide
- Views of Slides in a presentation
- Making Your Presentation More Attractive
- Running and Controlling Slide Show
- Printing a Presentation
- Introduction to Internet
- Glossary on Internet Terms

**Exercise-** Create and prepare a Power Point presentation

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*K. S. S. S.*  
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# Syllabus of the SPSS

## Introduction to SPSS

### Unit – 1 Use of Geographical Data

- Sources of Data - primary and secondary
- Scales of Measurement (Nominal, Ordinal, Interval, Ratio)
- Preparation of Questionnaires for Socio-Economic survey
  - Observation Schedule (Participant / Non-Participant)
  - Questionnaires (Open/ Closed / Structured / Non-Structured)
- Significance of Statistical Methods in Geography;

#### Exercise - Preparation of Questionnaires

### Unit – 2 Getting to know with SPSS

- Introduction to SPSS
- SPSS: Starting SPSS, SPSS windows, Menus, Dialogue boxes, functions, menus, commands, Working with data file
- SPSS file management
- Enter categorical and continuous data
- Define and label variables
- Manual input of data- Add variables and cases
- Automated input of data and file import

#### Exercise – Handling SPSS Data file

### Unit – 3 Data manipulation

- Data Transformation- recode and compute variables
- Syntax files and scripts-
- Output management

#### Exercise – Data Transformation and Syntax error

### Unit – 4 Descriptive analyses of data

- Frequencies-
- Descriptive-
- Explore-
- Crosstabs-
- Charts
- Correlation
- Regressions – Simple Linear and Multiple

#### Exercise – Statistical data analysis and interpretation using SPSS

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## **Syllabus of the GIS Course**

### **Unit-1: Introduction (CARTOGRAPHY BASIC)**

- Meaning and Definition of Cartography, Cartographic Communication
- Shape of the earth (Spherical, Ellipsoidal and Geoid)
- Geographical Coordinates (Latitude and Longitude), Graticules
- Scale
- Map and need for Map, Map Projection, Toposheet

**Exercise- Scale, Interpretation of Toposheets**

### **Unit - II: GIS: Introductory Concepts**

- GIS: Definition and Components (Hardware & Software)
- GIS Data (Spatial, Attribute),
- GIS Data Structure

**Exercise – Identification of Spatial data, Attribute data, integration of raster and vector data**

### **Unit – III: Softwares**

- Q-GIS(3.16)
- Arc GIS(10.0)

**Exercise- Georeferencing and Digitization using Softwares**

### **Unit – IV: Application of GIS**

- Introductory Concepts of GPS (Position, Location on Earth, GCP etc.)
- Use of Cartographic Techniques through GIS (Bar, Pie, Choropleth, Chorochromatic)
- Interpretation and Application of GIS (Land use/Land Cover, Water Resources, Forest Monitoring)

**Exercise- Collection of Data through GPS, Satellite Image Interpretation**

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## SYLLABUS: PERSONALITY DEVELOPMENT

### (VALUE ADDED COURSE)

For CBCS pattern for students of Humanities & Social Science

From the Academic Session 2017-18

Duration of the course: 3 months

#### Objective

- To become familiar with the major models and traditions related to the study of personality and Personal growth.
- To develop the skills necessary to be able to critically evaluate and describe an individual's personality and behavior
- To become familiar with a specific set of criteria which can be used to evaluate any theory of personality.
- The structure of the Syllabus of Personality Development would as follows:

#### **Unit-1: Introduction to Personality Development**

- Definition and basics of Personality
- Increasing Vocabulary
- Body Language
- Preparation of Self Introduction

#### **Unit-2**

- Five stages of Personality Development
- Five areas of Personality Development
- Communication Skills

#### **Unit-3: Techniques of Personality Development**

- Introduction to Leadership
- Leadership styles
- Team Building



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# PRANANATH COLLEGE (AUTONOMOUS), KHORDHA

## **SYLLABUS: SPOKEN ENGLISH (Value Added Course)**

For CBCS pattern for students of Humanities & Social Science  
From the Academic Session 2017-18  
Duration of the course: 3 months.

### Objective

- Total shift in pedagogy from lectures oriented classes to interactive learning
- To familiarize students with the function of grammatical items used to spoken /written language
- To train students to use the language with confidence & without committing errors
- The English Communication skill is to be taught in 2<sup>nd</sup> semester for all students of Humanities & Social Sciences, to earn two credits.
- The structure of the Syllabus of spoken English would look like this-

### Unit-1

#### **1. Listening**

Listening to texts, listening to CDs, Trials of a good listener

#### **2. Pronunciation**

Introduction to English phonetic Symbols consonants & Vowels with illustrations in use

#### **3. Listening & Comprehension**

Interpretation of texts based on question-answer. Interaction among students

#### **4. Reading Skill**

Techniques of reading. Reading comprehension of unseen pages  
Identifying the context & the central idea

#### **5. Vocabulary & word formation**

From different texts & dictionary

### Unit-2

#### **1. Basic Grammar**

Prescriptive/descriptive approaches grammaticality- acceptability -appropriateness-  
grammar in context-grammar in spoken & written

#### **2. Practice**

Exercise on the use of different grammatical constructions in context,  
Identification of the use of the above given grammatical devices from different texts like  
newspapers, poems, stories etc.

#### **3. Words & phrases used for conversation**

Making statements, questions, order & suggestions -denying -rejecting-disagreeing-  
possibility-ability, permission, obligations etc.

### Unit-3

#### **1. Dialogues**

#### **2. Public speech**

#### **3. Telephonic Conversation**

### Unit-4 Translation – from Hindi to English

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## **ADD ON COURSE IN SANITARY CHEMICALS**

**FULL MARK-50      TIME-2 hours**

### **Course Title: Sanitary Chemicals**

**Course Description:** This course provides an in-depth understanding of the chemical agents used in sanitation processes. Students will learn about the types, properties, applications, and safety considerations of sanitary chemicals in various industries, emphasizing effective cleaning, disinfection, and maintenance practices.

#### **Unit 1: Introduction to Sanitary Chemicals**

- Overview of sanitation and hygiene
- Importance of sanitary chemicals in public health
- Types of sanitary chemicals: detergents, disinfectants, sanitizers
- Chemical properties and characteristics relevant to sanitation

#### **Unit 2: Applications of Sanitary Chemicals**

- Cleaning protocols and procedures
- Selection criteria for different surfaces and materials
- Case studies and examples of effective sanitation practices
- Environmental considerations and sustainability in chemical use

#### **Unit 3: Safety and Regulations**

- Safety protocols for handling and storage of sanitary chemicals
- Personal protective equipment (PPE) requirements
- Regulatory frameworks and standards (e.g., EPA, FDA)
- Emergency response and spill management

#### **Unit 4: Advanced Topics in Sanitary Chemicals**

- Emerging trends in sanitation technology
- Innovations in chemical formulations
- Case studies on the role of chemicals in disease prevention
- Future directions in sanitary chemicals research and development

**Course Objectives:** By the end of the course, students should be able to:

- Identify and classify different types of sanitary chemicals.
- Apply appropriate sanitation techniques using chemical agents.
- Analyze safety considerations and regulatory requirements related to sanitary chemicals.
- Evaluate and recommend sanitary chemicals based on specific cleaning and disinfection needs.

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- Discuss current and emerging trends in the field of sanitary chemicals.

#### **Instructional Methods:**

- Lectures and presentations
- Case studies and group discussions
- Hands-on demonstrations (where feasible)
- Guest lectures from industry experts
- Assignments and projects

#### **Assessment Methods:**

- Quizzes and exams
- Practical demonstrations
- Research papers or case studies
- Class participation and discussions

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## **ADD ON COURSE IN FLOOR CLEANER**

**FULL MARK-50      TIME-2 hours**

### **Course Title: Floor Cleaner Technology**

**Course Description:** This course explores the science and technology behind floor cleaners, focusing on their formulation, application, effectiveness, and environmental impact. Students will gain practical knowledge of selecting, using, and evaluating floor cleaning products for various types of surfaces.

#### **Unit 1: Introduction to Floor Cleaners**

- Overview of floor cleaning and maintenance
- Types of flooring materials and their properties
- Introduction to floor cleaner formulations and ingredients
- Basic chemistry of cleaning agents: surfactants, solvents, builders

#### **Unit 2: Formulation and Application**

- Factors influencing cleaner formulation (e.g., pH, compatibility)
- Role of additives: fragrances, colorants, thickeners
- Techniques for effective application and distribution
- Hands-on demonstrations of proper cleaning techniques

#### **Unit 3: Specialty Floor Cleaners**

- Specific formulations for different floor types (e.g., hardwood, tile, carpet)
- Challenges and solutions for specialty environments (e.g., healthcare, food service)
- Case studies on effective use of specialty cleaners
- Sustainability considerations in specialty floor cleaning

#### **Unit 4: Evaluation and Maintenance**

- Performance testing and evaluation of floor cleaners
- Importance of maintenance schedules and protocols
- Cleaning equipment and tools: selection and maintenance
- Troubleshooting common cleaning problems

**Course Objectives:** By the end of the course, students should be able to:

- Identify different types of floor cleaners and their key ingredients.
- Formulate and recommend appropriate cleaners for specific floor types.
- Demonstrate proper techniques for applying and maintaining floor cleaners.

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## **ADD ON COURSE IN HAND WASH**

**FULL MARK-50      TIME-2 hours**

### **Course Title: Hand Wash Technology**

**Course Description:** This course explores the principles, formulations, techniques, and importance of effective hand washing in maintaining hygiene and preventing the spread of infections. Students will learn about different types of hand wash products, their ingredients, applications, and the role of hand hygiene in public health.

#### **Unit 1: Introduction to Hand Hygiene**

- Importance of hand hygiene in disease prevention
- Historical perspective and evolution of hand washing practices
- Microbiology of hands: common pathogens and transmission routes
- Guidelines and standards for hand hygiene (e.g., WHO, CDC)

#### **Unit 2: Hand Wash Formulations**

- Types of hand wash products: soaps, hand sanitizers, surgical scrubs
- Key ingredients in hand wash formulations: surfactants, antimicrobial agents, moisturizers
- Formulation considerations: pH balance, fragrance, viscosity
- Regulatory requirements and safety considerations for hand wash products

#### **Unit 3: Techniques and Applications**

- Proper hand washing techniques: duration, friction, coverage
- Differences in hand washing techniques for healthcare settings vs. general public
- Application of hand sanitizers and surgical scrubs: techniques and best practices
- Case studies and demonstrations of effective hand hygiene protocols

#### **Unit 4: Advanced Topics in Hand Wash Technology**

- Innovations in hand wash technology: antibacterial coatings, touchless systems
- Environmental impact and sustainability considerations
- Role of education and behavior change in promoting hand hygiene
- Emerging trends and future directions in hand wash technology

**Course Objectives:** By the end of the course, students should be able to:

- Explain the importance of hand hygiene and its impact on public health.
- Identify different types of hand wash products and their formulations.

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## **ADD ON COURSE IN SANITISER**

**FULL MARK-50      TIME-2 hours**

### **Course Title: Sanitizer Technology**

**Course Description:** This course provides an in-depth exploration of sanitizers, focusing on their formulations, applications, effectiveness, and safety considerations. Students will learn about different types of sanitizers, their active ingredients, regulatory requirements, and their role in maintaining hygiene and preventing the spread of infections.

#### **Unit 1: Introduction to Sanitizers**

- Importance of sanitizers in public health and hygiene
- Types of sanitizers: alcohol-based, quaternary ammonium compounds (QACs), chlorine-based, hydrogen peroxide-based
- Formulation principles: active ingredients, additives, pH balance
- Regulatory standards and guidelines for sanitizers (e.g., EPA, FDA)

#### **Unit 2: Sanitizer Formulations and Chemistry**

- Chemical properties and mechanisms of action of different sanitizer types
- Factors influencing sanitizer efficacy: concentration, contact time, application method
- Compatibility with different surfaces and materials
- Safety considerations in sanitizer formulations: handling, storage, disposal

#### **Unit 3: Applications and Use Cases**

- Best practices for sanitizer application in healthcare, food service, and other industries
- Role of sanitizers in infection control and prevention
- Case studies and examples of effective sanitizer use
- Emerging trends in sanitizer technology and formulations

#### **Unit 4: Safety, Regulations, and Sustainability**

- Safety protocols for handling and using sanitizers
- Environmental impact and sustainability considerations
- Regulatory compliance: labeling, testing, and reporting requirements
- Innovations in sustainable sanitizer formulations and packaging

**Course Objectives:** By the end of the course, students should be able to:

- Describe the different types of sanitizers and their applications.
- Explain the chemical principles and mechanisms of sanitizers.

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**ADD ON COURSE IN WATER QUALITY ANALYSIS**  
**THEORY-40 LECTURES (1 HOUR DURATION EACH)**

**FULL MARK- 70**

**TIME-3HOURS**

**UNIT-I**

**Introduction to Hydrology and Water Quality**

World water resource; water resources of India – Different ecosystem of Hydrology - Riverine, Estuarine and marine - State of water quality in India.

Water quality parameters and their interaction-physical and chemical characteristics- turbidity, color- temperature – chemical constituents, taste, color, acidity, alkalinity-  $\text{CO}_2$ , hardness, pH- Methods of testing.

**UNIT-II**

**Fresh Water Ecosystem and Water Pollution**

Characteristics of Fresh water ecosystem - Chemistry of lakes, rivers, ponds and streams - Biological methods of Zonation - Microbial load and Aquatic biota - complete analysis - Approaches - Water cycle.

Water pollution – Causes - Industrial and Domestic effluents – Pesticides - Health Hazards - Control measures - Abatement.

**UNIT-III**

**Water Composition Analysis and Heavy metal Testing**

- (a) Water Composition analysis – Composition – Hardness testing – Chromatographic analysis – pH- Salinity testing – Ionic Composition – Minerals- Pollutants – DO, BOD, COD, EC, DTC – Nutrient Parameters- Portability of Water.
- (b) Heavy Metal testing- Types of Heavy Metals- Toxicity testing- Biological methods- Chemical methods- Microscopical methods-AAS- Spectrophotometer- CPES- Flame Photometer- Hydrocarbon testing (PAH).

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## UNIT-IV

### Usage of Toxicity Testing

Forensic chemical toxicology- Dose and toxicity – Toxicity of metabolite – Sampling and Testing of toxins- Detection and classification – In vitro Toxicology – Methods and Assays used in vitro toxicology – Global classifications of toxicity – Health Hazards – Acute Toxicity – Environmental Hazards – Factors influencing Toxicity – Toxicogenomics.

### Toxicity Testing and Microbial Testing

- (a) Toxicity Testing- framework of environmental toxicity – toxicity testing –dose response curve, standard methods, classification of toxicity tests – design parameters for single species toxicity tests, the design of multi – species toxicity tests.
- (b) Microbial testing- Microbiological testing – Coli forms – Culture Identification – MPN test – Microscopy: Principles and Practices – Staining Methods – Water born Pathogen: Types and detection.

### Reference

1. Hydrology- Principles, analysis and Design- H.M. Raghuth, New age International Publications.(1996)
2. Ocean Management, Rakesh Kapoor-Book Enclave(2009)
3. Marine Environment – Ravi Mishra, Anumol Publications(2002)
4. Pollution and Bioremediation – P.C. Trivedy
5. Chemical Toxicology – Zulfikar S Patel, Dominant Publishers and Distributers(2011)
6. Principles and Practice of Analytical Chemistry- Fifeild and Kealey, Blackwell publishers(2000)
7. Introduction to environmental toxicology – Impacts of chemicals upon Ecological Systems, W,G. Landis and Ming – Ming – Ho Yu, (2003). Lewis Publishers, Boca Raton.

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# Add on Course (MATLAB)

Number of units: 3

Theory- F.M.- 50

Number of classes required :15

(Duration of a class - 45 minutes)

## UNIT-1

(05- classes)

Introduction and preliminary ideas about MATLAB, History of MATLAB, Advantage of MATLAB, Common MATLAB functions, Simple x-y plots, Multiple plots, Control structures

## UNIT-2

(05- classes)

MATLAB programming, creating matrices, matrix operations, Graphics - Annotations, Plotting of graph of different functions .

## UNIT-3

(05- classes)

Formation of Ordinary Differential Equation, Solution of Ordinary Differential Equation, MATLAB Program for solution of 1st, 2nd and 3rd order Differential equation with given initial conditions, Population Growth Model, Decay Model, Oxygen Debt. Model

### Practical

Number of classes required :15

F.M-50

1. Plotting the graphs of the functions  $e^{(ax+b)}$ ,  $\log(ax+b)$ ,  $1/ax+b$ ,  $\sin(ax+b)$ ,  $\cos(ax+b)$  and  $|ax+b|$  to illustrate the effect of a and b on the graph.
2. Plotting the graphs of the polynomial of degree 4 and 5.
3. Sketching parametric curves (E.g. Trochoid, cycloid, hypocycloid).
4. Obtaining surface of revolution of curves.
5. Tracing of conics in Cartesian coordinates /polar coordinates.
6. Sketching ellipsoid, hyperboloid of one and two sheets (using Cartesian co-ordinates).
7. Plotting of second & third order solution family of differential equations.
8. Growth & Decay model (exponential case only).

### Books recommended:

1. Getting started with MATLAB-OXFORD University Press  
Rudra Pratap.
2. Matlab programming with practical-Kalyani Publishers  
Dr. Ajaya kumar Singh
3. Applied Numerical Methods using matlab-New Age International (P) limited  
Rao. V. Dukkipati

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# **Add on Course** **(Vedic Mathematics)**

**Number of units: 3**

**Number of classes required :15**

**Theory-F.M-50**

**(Duration of a class - 45 minutes)**

## **UNIT-1** (05-classes)

Multiplication (complements, multiplication of single digit numbers, multiplication using a base of 100, multiplication using a base of 1000 multiplication above the base), Division (simple division, division with remainders, naming the parts of a division sum, dividing by nine, Nikhilam division, divisors with base 100 and 1000, Nikhilam division with any base), multiplication by vertically and crosswise.

## **UNIT-2** (05-classes)

Prime and composite number, Highest common factor, Lowest common multiple, coprime numbers, Fractions, Equivalent fractions, improper fraction, mixed numbers, multiplying fractions, multiplication of mixed number, Division of fraction, division of mixed number.

## **UNIT-3** (05-classes)

Algebra-first principle, solving equations, two-stage equations by transpose and adjust, expanding brackets, equations with brackets, making up expressions, dealing with minus signs, solving equations with minus signs.

## **Practical**

**Number of classes required :15**

**F.M-50**

**Experiment-1** Meaning of Ekadhiken Sutram and its applications in finding squaring of numbers ending in 5.

**Experiment-2** Squaring by Anurupeyana Sutra. General multiplication by Urdhav Tirya Vyam (Vertically Cross- wise) for 2, 3,4,5,6....digits.

**Experiment-3** Multiplications by numbers near base. Divisibility tests, Division of numbers near base.

**Experiment-4** Different methods of Squares (General method, Base method, Duplex method etc.) Cubes, Cube roots, Square Roots, Formation of any table.

**Experiment-5** Use of various Vedic Techniques for answering numerical aptitude questions from Competitive Examinations.

## **Books recommended:**

1. Vedic Mathematics for schools - Book 1  
(Author-J.T. Glover, Motilal Banarsidass publishers private limited, Delhi)
2. Vedic Mathematics for schools - Book 2, J. T. Glover
3. Vedic Mathematics for schools - Book 3, J. T. Glover

## **Reference Book:**

Vedic Mathematics

Author:- Jagadguru Swami Sri Bharati Krisna Tirthaji Maharaja

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Prananath College (Autonomous)  
Khordha

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# SYLLABUS

The certificate Course in Lighting & LED Technology imparts practical skills of different steps of LED Lighting Mechanical Assembly processes. This course deals with the fundamentals of Electronics, LED Technical Basics, Types of LED Lighting Products, processes of LED Product Assembly, Testing & inspections, material used in LED products, applicable standards for LED Products etc. The entire course is divided into 2 Parts. First part is Theory and second part is Practical.

**Name Of Course :** Lighting and LED Technology

**Aim Of The Program :** This program is aimed at training candidates for the job of a LED Light Technology in the electronics manufacturing sector. To get knowledge about mechanical assembly of any type of LED Lighting Product.

**Course Duration**

Theory – 30 hrs

Practical – 30 hrs

Total – 60 hrs

CONTENT	No. Of Hours
<b>Unit – 1 : Basics of Electronics Components</b> Basics of Electronics, Electronic Components, Integrated Circuits, Soldering Iron, Use of Soldering Iron, LED History, Working of LED, Types of LEDs, Factor affecting life of LED, Parameters of LED, Lumen Output, LED Power Sources, Measurement of LED parameters, Series and Parallel connection of LEDs	12 Hrs
<b>Unit – 2 : LED Assembly</b> Components of LED, LED Bulb Assembly, LED Street Light Assembly, LED panel Light Assembly, Burn in test for LED Luminary	12 Hrs
<b>Unit – 3 : Thermal Management and Analysis</b> Heat sink, Thermal Compound, Effect of Temperature on LED Junction. Analysis of different LED Circuits, Luminosity, Factors affecting Luminosity	6 Hrs

**THEORY/PRACTICAL:**

Sl. No.	UNIT	Theory (Hours)	Practical (Hours)
1	Basics of Electronics Components	12	12
2	LED Assembly	12	12
3	Thermal Management and Analysis	6	6
	Total	30	30

*[Signature]*  
Co-ordinator 12/10/16

*[Signature]*  
H.O.D 12.10.16

*[Signature]*  
Principal 12/10

*[Signature]*  
24.6.24

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Pranath College (Autonomous)  
Khordha  
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## SYLLABUS

### Objective:-

This is a skill oriented course in the study of solar photovoltaic (PV) cells of crystalline Silicon, modules(panels), and system components; electrical circuits; PV system design and sizing for use on homes, commercial building etc., understanding energy conversion from sunlight to electricity, and working with solar conversion equipment. This Course will give students the book knowledge and hands on experience needed to become entrepreneur / self employed.

**Name of the course:** Training programme on solar power technology.

Course Duration: Theory: 30 Hours, Practical: 30 Hours. Total 60 Hours.

CONTENT	No of Hours
Unit-I : Solar PV cell Modules(panels )-Crystalline Silicon solar cell, Array structure, Array foundation, Junction boxes	09
Unit-II: PCU(Power Conditioning Unit) Conversion from A.C to D.C, Inverter and the associated control and protection devices, Maximum power point Tracker- an interface between solar PV array and inverter to maximize solar PV array energy input into the system. Charge controller. AC charger.	12
Unit-III: Battery Bank: Container, Cover, Electrolyte, Voltage.	06
Unit-IV: Wires and cables:	03

### THEORY/PRACTICAL:

Sl.No	UNIT	Theory(Hours)	Practical(Hours)
01	UNIT-I	09	09
02	UNIT-II	12	12
03	UNIT-III	06	06
04	UNIT-IV	03	03
	Total	30	30

Coordinator

H.O.D

PRINCIPAL

24.6.21

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Pranathi College (Autonomous)  
Khorra

**P.N. COLLEGE (AUTONOMOUS), KHORDHA**  
**DEPARTMENT OF BOTANY**

*Courses of studies*

**On**

**Add-on Course in "Herbarium Technology" – A three**

**month course**

**Theory – 50 Marks**

**Project – 50 Marks**

***Unit – I***

Importance of Plants to Mankind, History of Botanical exploration in India. Needs for intensive plant explorations. Herbarium: Concept and definition. Historical development. Role of Herbaria and gardens. The changing nature of Herbarium and its future. Phytography of plants in details. Function of Herbarium and Botanic Gardens. Herbarium as conservatory of material and data, teaching and research. Different kind of Herbaria. Important Herbaria of India, World and State of Odisha. Standard abbreviation for Herbaria.

***Unit – II***

Botanic gardens and its functions, special kind or section of gardens. Botanical collections, purpose, kinds of field work, planning and collection trip exploration. Expedition. Preparation for study and arrangement of journey and stay. Materials or equipments. Camp arrangement. General hints and cautions. Collection of work, what to collect, field notes, write method of pressing and



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**Khurda**

drying of specimens. Collection of special groups or kinds of plants. Size of Herbarium and arrangement of specimen within pressing paper.

### Unit - III

Poisoning and preservation of specimens. Mercuric Chloride, Formalin. Fumigation, Heating. Some special methods. Herbarium size. Mounting, Gluing, strapping, Herbarium labels. Identification of plants. Incorporation (filling) accession, filling of specimens. Arrangement of specimens in the Herbarium. Special arrangement. Receipt, Loan and Exchange, Despatch general instructions for Herbarium workers. Herbarium equipment. Herbarium cases, cup-board, Almirah, Racks, Mounting boards, Genus folder, Species folder slips for identification. Boxes for storing for dry fruits and seeds. Elementary idea of Botanical keys and their construction. Botanical nomenclature and type concept.

### Project works

(50 Marks)

1. Collection of plant specimens with flowering and fruiting condition of various locality of Odisha with the preparation of field note books.
2. Identification up to Species with the help of local floras.
3. Preparation of herbarium with technique, proper pressing, drying, poisoning, mounting, stitching, labeling in a systematic process.
4. Maintenance of Herbarium and preservation according to Bentham & Hooker's system of classification in the Department of Botany, P.N. College (Autonomous), Khordha.

Approved  
Principal  
Pranath  
Goh  
JP  
Bhadhan  
V. K. Patra  
Chitra Patra  
Sanghata Naga  
Jyoti K. Mahan  
Rashmi P. Mahan

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Khordha



## UNIT-I : Introduction to Public Policy

- Meaning, Types and Significance
- Approaches and Models
- Institutional Arrangement for Public Policy Making
- Public Policy Process and Policy Making in India
- Policy Implementation
- Policy Analysis, Evaluation and Impact Assessment

## UNIT-II : Governance in India

- Government and Governance
- Governance and Administration
- Good Governance: Concept and Challenges
- Good Governance Initiatives in India
- E-Governance
- Digital Governance

## UNIT-III : Public Policies and Acts in India

- Right to Information Act 2005
- New Education Policy 2020
- National Food Security Act 2013
- Mahatma Gandhi National Rural Employment Guarantee Act 2005
- National Health Mission
- Swachh Bharat Mission



Pradeep Harichandran  
23/09/2023

Ayan Kumar Behera  
23/09/2023

Sivani Das  
23.9.23

Pradeep Harichandran  
Principal  
Pranath College (Autonomous)  
Khurda

# Syllabus for certificate course on

## PUBLIC POLICY AND GOVERNANCE IN INDIA (Add-on Course)

### UNIT-I : INTRODUCTION TO PUBLIC POLICY

- Meaning, Types and Significance
- Approaches and Models
- Institutional Arrangement for Public Policy Making
- Public Policy Process and Policy Making in India
- Policy Analysis, Evaluation and Impact Assessment

### UNIT-II: GOVERNANCE IN INDIA

- Government and Governance
- Governance and Administration
- Good Governance: Concept and Challenges
- Good Governance Initiatives in India
- E-Governance
- Digital Governance

### UNIT-III: PUBLIC POLICIES AND ACTS IN INDIA

- Right to Information Act 2005
- New Education Policy 2020
- National Food Security Act 2013
- Mahatma Gandhi National Rural Employment Guarantee Act 2005
- National Health Mission
- Swachh Bharat Mission

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Principal  
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