PHYSICS

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
Unit – 1 : Basics of Electronics Components Basics of Electronics, Electronic Components, Integrated Circuits, Soldiering 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
Unit – 2 : LED Assembly Components of LED, LED Bulb Assembly, LED Street Light Assembly, LED panel Light Assembly, Burn in test for LED Luminary	12 Hrs
Unit – 3 : Thermal Management and Analysis 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

12/10/16
Co-ordinator

H.O.D

Principal

CHEMISTRY

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- 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).

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- Fifield 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.

PRACTICAL ANALYTICAL METHODS

PRACTICAL-10 LECTURES (2 HOURS DURATION EACH)

FULL MARK- 30 **TIME-3HOURS**

1. Testing of Hardness.
2. Testing of pH.
3. Testing of BOD and COD.
4. Testing of Heavy Metals (Cr, Cu, Fe).
5. MPN analysis.
6. Chromatographic analysis of water (column chromatography).

ZOOLOGY

Ornamental Fish Culture & Management

F.M-60

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).

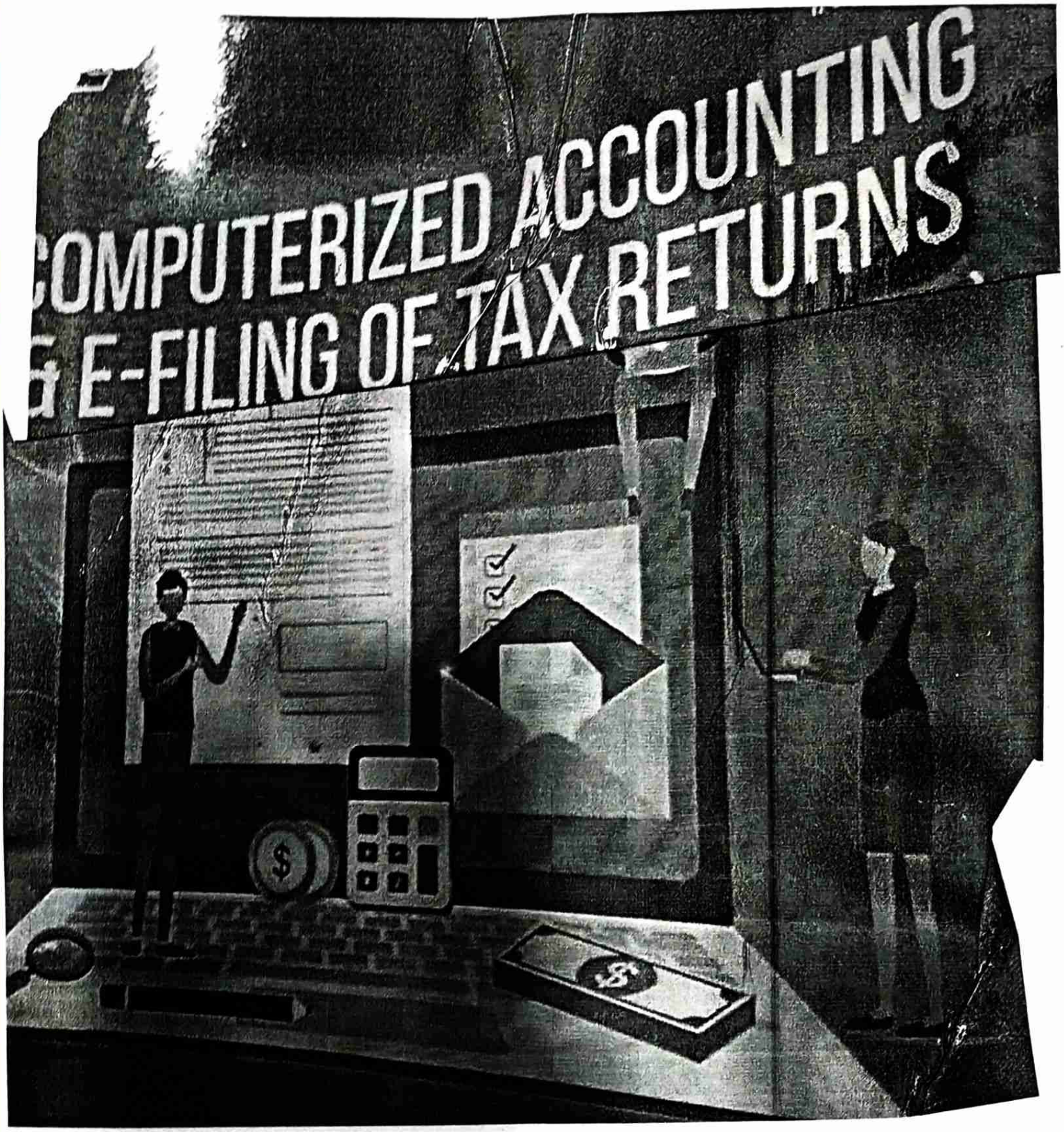
Suggested readings:-

1. Aquarium fishes — Jena Burton
2. Hand book of fresh water Ornamental fishes — S.Mathur, L.L. Sharma & A.K.Mathur
3. Profitable fish keeping — Guy N. Smith
4. Guide to fish Breeding — Chris Andrews
5. Aquarium fish keeping — C.L.S. Srivastava
6. Aquarium management — Amita Saxena
7. Aquarium Plants — J. Schmidt

12-7-16

12.7.16

12-7-16


COMPUTERIZED ACCOUNTING
& E-FILING OF TAX RETURNS

COMPUTERIZED ACCOUNTING & E-FILING OF TAX RETURNS

CONTENTS

Department of Political Science

Certificate Course on Public Policy and Governance

(Virtual Learning Mode / Classroom Learning Mode)

Full Mark = 100

Course Code	Title
CC.1	Introduction to Public Policy & Governance.
CC.2	Public Policy Analysis.
CC.3	e-Admission and Digital Governance
CC.4	Data Analytics for Policy Research.

Course Highlights

Pedagogy : * Insights from teachers with experience on the same domain.

* Interactive Sessions, home assignment, objective type test

Duration : * 3 Months 30 hours of teaching (Sunday)

Content : * Updated and State-of-the Art Courses on Public Policy & Governance, Public policy Analysis, Digital Governance and Data Analytics for Policy Research.

Detailed syllabus will be shared with the students who have registered their names for the Course.

Certificate of Completion : * Registered students will receive Certificates from Department of Political Science validated by Controller of Examination, Prananath College (Autonomous), Khordha on completion of the course work. Grade will be awarded as 'A' Grade, 'B' Grade and 'C' Grade.

List of Readings : List of readings and web resources will be provided to the registered students.

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(Ashok Kumar Pradhan)
Course Coordinator,
Public Policy & Governance
Department of Political Science
Prananath College (Autonomous)
Khordha

N.B The entire syllabus is subject to the approval of BOS, Prananath College (Autonomous) Khordha.

Dr Sarat Kumar Dora
HOD
Political Science