

Key Areas

- Food Process and Post-Harvest Technology
- Land and Water Resource Management
- Farm Machinery and Mechanization
- Computer Science and Information Technology
- Civil and Environmental Engineering
- Electrical Energy System and Management
- Mechanical Engineering
- Electronics and Communication Engineering
- Dairy Technology
- Biotechnology
- Bioinformatics
- Biochemistry and Biochemical Engineering
- Microbiology and Fermentation Technology
- Plant Tissue Culture
- Commerce and Management
- Crop Production
- Horticulture
- Insect, Pest and Disease Management
- Crop Improvement and Seed Technology
- Agricultural Extension and Communication
- Agribusiness Management
- Pharmaceutical Sciences
- Medical Laboratory Technology
- Public Health
- Home Science and Women's Development
- Forestry and Natural Resource Management
- Animal Science and Management
- Forensic Science
- Industrial Chemistry
- Teacher Education
- Film and Mass Communication

Data Mining and Warehousing

Introduction

Welcome to the course on Data Mining and Warehousing. This course is designed to provide you with a comprehensive understanding of two critical components of data management: Data Mining and Data Warehousing. This course will introduce you to the essential concepts and techniques in data warehousing and data mining, equipping you with the skills to turn raw data into valuable insights.

Programme Description

The Data Mining and Warehousing program is designed to equip students with the knowledge and skills necessary to manage and analyze large volumes of data effectively. This program covers the fundamental principles of data warehousing, including the design and implementation of data storage systems that support efficient data retrieval and analysis. Additionally, it delves into data mining techniques that uncover hidden patterns, correlations, and insights from complex datasets. Through a combination of theoretical learning and practical applications, students will be prepared to tackle real-world challenges in data management, making them valuable assets in fields such as data science, business intelligence, and IT.

Programme Participant

Student or professional seeking to deepen their understanding of data mining and analytical techniques. Participants are often individuals with a background in computer science, information technology, business analytics, or related fields who are eager to enhance their skills in applying data mining techniques to extract actionable insights from data.

Objectives

By the end of this course, you will be able to:

- Understand the Fundamentals of Data Warehousing by learning about the architecture, design, and implementation of data warehouses.
- Master Data Mining Techniques by gaining knowledge of various data mining techniques such as classification, clustering, association rules, and regression.
- Apply Practical Skills by involving yourself in hands-on exercises and case studies that involve real-world data scenarios.
- Bridge the Gap between Theory and Practice by Developing the ability to apply theoretical knowledge to practical data problems.

Duration of program: 2 weeks

Date: 9th December, 2024 – 22nd December, 2024

Program Coordinator: Dr. W. Jeberson

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- Remote-sensing and GIS

Minimal and Novel Food Processing**Introduction**

The emergence of minimal food processing techniques which have a limited impact on a food's nutritional and sensory property has been a major new development in food processing. Minimal processing is an effective approach for minimizing undesirable changes such as high temperature short time techniques and new thermal technologies. The most promising novel food processing technologies may represent in terms of energy efficiency, water saving and reduced emissions. The emergence of novel thermal and non thermal technologies allows producing high quality products with improvements in terms of heating efficiency and energy savings. Minimal and novel processing technologies are increasingly attracting the attention of food producers for providing food products with improved quality, reducing processing costs and improving the added value of the products.

Program Description

This training program will provide hands on experience with minimal and novel processing of foods. Training program covers thermal and non thermal methods of minimal processing of foods, safety criteria for minimally processed foods, modified atmosphere packaging, novel hydro thermodynamic food processing technology with high nutritional and nutraceutical value. It will be delivered using a mixture of lectures, practical training, site visits and interactive discussions. These minimal and novel processing technologies will provide skills transferable to other field, thereby broadening employment prospects.

Program participants

This program is designed for participants with food / life science background from both academia as well as industry.

Objectives

The main objectives of the program are as follows:

- To understand the role of minimal and novel food processing.
- To learn various technologies of minimal processed food products.
- To employ novel hydro thermodynamic food processing technology, to understand nutritional and sensory qualities of food.
- To discuss minimal and novel processing operations, safety criteria and modified atmosphere packaging.

Curriculum

The study programme includes the following subjects:

- Introduction to minimal and novel food processing.
- Minimal processing methods novel food processing technologies.
- Preparation of natural whole food with high nutritional and nutraceutical value using novel /minimal techniques.
- Modified atmosphere packaging, active and intelligent packaging.
- Safety criteria for minimal /novel processed foods.

Duration of program: 2 weeks

Date: 9th December, 2024 – 22nd December, 2024

Program Coordinator: Dr. R. N. Shukla

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POST - HARVEST MANAGEMENT OF FRUITS AND VEGETABLES

Introduction:

Fruit and vegetables are highly perishable but most important commodity for human diet due to their high nutritional value. Time and money are required to cultivate fruits and vegetables and unless the farmer is providing food only for his own household, he automatically becomes part of the market economy: he must sell his produce, he must recover his costs, and he must make a profit. Estimates of the post-harvest losses of fruits and vegetables in the developing world from mishandling, spoilage and pest infestation are put at 25 percent; this means that one-quarter of what is produced never reaches the consumer for whom it was grown, and the effort and money required to produce it are lost-forever. Fruit and vegetables crops are much less hardy and are mostly quickly perishable, and if care is not taken in their harvesting, handling and transport, they will soon decay and become unfit for human consumption. Estimates of production losses in developing countries are hard to judge, but some authorities put losses of sweet potatoes, plantain, tomatoes, bananas and citrus fruit sometimes as high as so percent, or half of what is grown. Reduction in this wastage, particularly if it can economically be avoided, would be of great significance to growers and consumers alike. They are the cheapest and other source of protective food supplied in fresh or processed or preserved form throughout the year for human consumption. Hence the national picture will improve significantly. - Fruit and vegetable are available in surplus only in certain seasons and availability in different regions.

Programme Description:

This training programme will provide hands on experience. Practice in judging the maturity of various horticultural produce, determination of physiological loss in weight and quality. Grading of horticultural produce, post-harvest treatment of horticultural crops, physical and chemical methods. Packaging studies in fruits, vegetables, by using different packaging materials, methods of storage, post-harvest disorders in horticultural produce. Visit to markets, packaging houses and cold storages units.

Programme Participants:

This programme is designed for participants with life science and Horticultural background from both academia as well as industry.

Objectives:

- To understand the importance and role of post-harvest technology in horticultural crops.
- To workout the maturity indices, harvesting, handling, grading of fruits and vegetables.
- To study about the Post-harvest treatments of horticultural crops.
- To learn different quality parameters and specification.
- To study about the methods of storage for local market and export.
- To discuss the management of post-harvest losses and value addition of fruits and vegetables.

Curriculum

- Practice in judging the maturity.
- Grading of horticultural produce
- Post-harvest treatment of horticultural crops.
- Management of post-harvest losses and value addition of fruits and vegetables.
- Storage and packaging studies in fruits, vegetables

Duration of program: 2 weeks

Date: 9th December, 2024 – 22nd December, 2024

Program Coordinator: Dr. Saket Mishra

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Electrical Power Generation Transmission and Distribution

Introduction

The production and the distribution of electricity are one of the most complicated and capital-intensive industrial processes in the world. Although the specifics of producing and distributing electricity are complicated, we can organize the process of creation and delivery of energy into three major steps, Generation, Transmission, and Distribution. Once the power is generated in power plants The transmission process moves electricity over long distances, from the generating plants to local service areas. The electricity is routed into a network of high-voltage transmission lines. The distribution process is the final step to deliver electricity.

Programme Description

This training programme will provide hands on experience with new developments in Generation and transmission of Electrical Engineering. It will be delivered using a mixture of lectures and interactive discussions.

Programme Participants

This programme is designed for participants with Electrical Engineering background from both academia as well as industry.

Objectives

The main objectives of the programme are as follows:

- To understand the role of electrical energy in present scenario.
- To learn different Schemes of transmission & distribution.
- To learn new developments in Generation and transmission of Electrical Energy.
- To learn Computer application to power system.

Curriculum

The study programme includes the follow subjects:

- Introduction to power system.
- Different Types of power plants.
- New developments in Generation and transmission of Electrical Energy.
- Distributed Generation.
- Supervisory Control and Data Acquisition system.

Duration of program: 2 weeks

Date: 9th December, 2024 – 22nd December, 2024

Program Coordinator: Dr. Jyoti Srivastava

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URBAN WASTE MANAGEMENT USING REMOTE SENSING & GIS TECHNIQUES

Introduction

Urban Solid Waste Management (USWM) is considered as one of the most important and complex issue for developing countries due to rapid growth of population, urbanization and affluence. The most common problems that could arise with improper management of solid waste includes diseases transmission, fire hazards, odor nuisance, atmospheric and water pollution, air pollution, aesthetic nuisance, economic losses, etc. Remote sensing and GIS techniques can be used to effectively manage the urban waste. Such techniques not only reduces time and cost towards selecting appropriate waste disposable sites, but also provides means for long-term monitoring of the sites due to synoptic view and repetitive coverage.

Programme Description

This program is intended to train the participant in understanding the evaluation criteria for waste management using remote sensing and GIS techniques. Additionally, participants will learn to develop, collect and utilize various remotely sensed and geospatial data towards USWM.

Programme Participants

This programme is designed for participants from academia, research, government and non government organizations involved in urban planning, development and management.

Objectives

- To understand the concepts of remote sensing and GIS in USWM.
- To learn identifying illegal waste disposal sites using geospatial tools & techniques.
- To learn to generate various spatial and non spatial data towards USWM .
- To learn how to apply a multi-criterion approach for finding out the best solid waste disposal site using remote sensing and GIS techniques.

Curriculum

The program will include the following topics:

- Concepts of remote sensing and GIS in USWM.
- Preparation of spatial and non spatial data.
- Identification of illegal waste disposal site through remotely sensed and ground based data.
- Evaluation criterion for waste disposal site selection
- Point allocation approach (Ranking)
- Site suitability analysis.

Duration of program: 2 weeks

Date: 9th December, 2024 – 22nd December, 2024

Program Coordinator: Dr. Mukesh Kumar

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DRUG DESIGN: TRENDS AND APPROACHES**Introduction**

A drug is most commonly a small organic molecule that activates or inhibits the function of biomolecules such as proteins to results in therapeutic application. Drug design seeks to explain the relationship of physico-chemical properties of the molecules and various processes by which these molecules usually produce their pharmacological effects on the basis of molecular interaction in terms of molecular structures. In most basic sense, drug design approach builds a relationship between pharmacological activities with chemical structure and involves design of small molecules that are complementary in shape and charge to the bimolecular target by which they interact and will bind. In today's highly competitive context of limited resources rational drug design works as a tool to the pharmaceutical industry which are interested in finding new techniques that will reduce time and investment in the early stages of development and identify entities with a high probability of success through the clinical phases to attain approval as a new drug.

Programme description

This training programme will provide hands on experience with cutting edge methods and tools available to highlight the recent trends, advances and future perspectives in the field of Cheminformatics, Bioinformatics, drug design, Genomics and other related disciplines. It will be delivered using a mixture of lectures, computer-based practical sessions and interactive discussions. The main aim behind this workshop is to provide skills transferable to other fields, thereby broadening employment prospects and also would be useful to researchers working in drug discovery.

Programme participants

This programme is designed for participants with Pharmaceutical science, Biotechnology and life science background from both academia as well as industry who are interested in drug design and molecular modeling.

Objectives

The main objectives of the programme are as follows:

- To understand comparative modeling of protein structures and protein-protein complexes.
- To understand advances and challenges protein-ligand docking and its application in novel lead optimization technique.
- To discuss QSAR and molecular modeling in drug discovery research.
- To learn computational methods in order to understand homology modelling and protein analysis.
- To understand scoring function for Molecular docking

Curriculum

The study programme includes the follow subjects:

- Introduction to Molecular Modeling, Force field, energy minimization techniques.
- Virtual Screening & Docking
- Pharmacophore Models
- Focused Library Design
- Molecular Simulation & Binding Energy
- Predicting ADME & Toxicities
- Fragment-based Drug Design

Duration of program: 2 weeks

Date: 9th December, 2024 – 22nd December, 2024

Program Coordinator: Dr. Amita Verma

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