SCHEDULE

The primary objective of this seminar is to introduce undergraduate students to the basics of bioinformatics, an interdisciplinary field that combines biology, computer science, and data analysis. The seminar aims to:

1. Introduction to Bioinformatics: Overview of bioinformatics, its scope, and applications in biological research and medicine.
2. Key Bioinformatics Tools and Techniques: A look at essential software and algorithms used in genomics, proteomics, and molecular modelling.
3. Genomic Data Analysis: Exploring the methods and tools used to analyse large-scale genomic data, including DNA sequencing, alignment, and interpretation.
4. Applications of Bioinformatics in Drug Discovery: Understanding how bioinformatics is transforming the pharmaceutical industry, from drug design to personalized medicine.
5. Computational Biology and Systems Biology: An introduction to computational modeling and simulations in understanding biological systems.
6. Bioinformatics in Healthcare: Examining the role of bioinformatics in diagnostics, disease prediction, and precision medicine.
7. Ethics and Data Privacy in Bioinformatics: Discussing the ethical considerations and challenges related to the collection, analysis, and sharing of biological data.

EXPERTS FOR TRAINING:

Ms. Roshini Singh, M.Tech
(Trainee Computational Biology Lab, CSIR-CIMAP)

Ms. Arpita Singh M.Tech
(Trainee Experiome Biotech Pvt Ltd, Lucknow)

SCHEDULE

Lecture Title: **Introduction to Bioinformatics: Applications and Emerging Research Trends**

Hands-on Workshop 1 – **Sequence Alignment (Pairwise and Multiple Sequence Alignment using Clustal Omega)**

DAY 1: Introduction to Sequence Databases

Session 1 – Introduction to Sequence Databases (NCBI, EMBL, DDBJ)
Session 2 – Protein Structure Databases (PDB, UniProt, SwissProt)
Session 3 – Primer Designing Tools (NCBI Primer-BLAST)
Session 4 – Phylogenetic Analysis (Tree Construction)
Session 5 – Identification of Motifs and Domains
Session 6 – Protein-Protein Interaction Analysis (STRING Database)

Day 2: Protein Structure Prediction and Docking

Recap of Day 1 and Overview of Day 2
Session 1 – Protein Structure Prediction (Secondary and Tertiary Structure Prediction using (SWISS-MODEL)
Session 2 – Hands-on Workshop 2 – Identification of Active Sites and Ligands (CASTp, SwissDock)
Session 3 – Hands-on Workshop 3 – Docking and its Analysis
Case Study Discussion – Docking Workflow for Drug Discovery

GUIDELINES FOR THE PARTICIPANTS

Guidelines for the participants

Registration is mandatory for all participants. Only registered participants will be allowed to take part in the seminar. Participants can participate in the seminar in both online and offline mode. The registration fee will be applicable for the participants and only registered participants will receive the certificates.

Registration Portal –
1. Get yourself registered in college.
2. info@skdacademy.co.in

Registration fees –
Registration fee is applicable for all participants. The fee includes entry to all sessions of the seminar,. Registration fee: Rs 200/-for all. There is no provision of TA/DA for the participants.
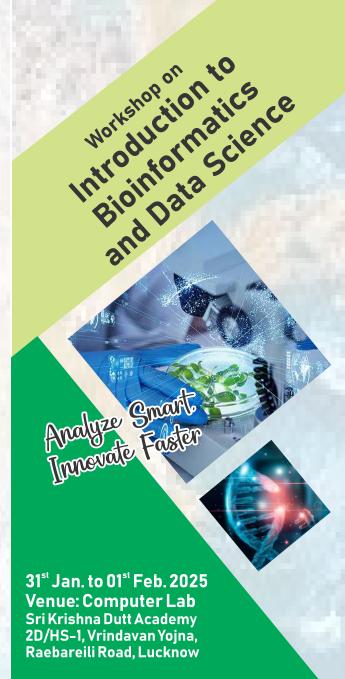Accommodation for outstation participants will be arranged by themselves.

Patron: Mr. Manish Singh Hon'ble Director, Sri Krishna Dutt Academy (Degree Section)
Organizing Secretary : Dr. Arti Singh Dr. Manjari Shukla
Organizing Committee : Dr. Anshul Pant Dr. Madhu Gupta Ms. Roshani Yadav Ms. Swati Sehgal Ms. Ayushi Singh
Contact Details: For any inquiry please contact:
Mr. Subhash Tiwari +91 9455866443

SRI KRISHNA DUTT ACADEMY
Affiliated to University of Lucknow and Recognised by NCTE

Accredited GRADE "A" by NAAC

Workshop on
Introduction to Bioinformatics and Data Science

Analyze Smart. Innovate Faster

31st Jan. to 01st Feb. 2025
Venue: Computer Lab
Sri Krishna Dutt Academy
2D/HS-1, Vrindavan Yojna,
Raebareli Road, Lucknow

Sri Krishna Dutt Academy, Lucknow has always been conscious of its role as a constructive and responsible part of the society. Utmost attention is given to the overall development of the personality of students. Inspite of a phenomenally large number of students, the standard of discipline is well maintained. The student teacher relation remains absolutely cordial. The college also provides professional/ personal counselling to the students. Our institution's main objective is to link academic education with job opportunities. Overall consistent and unstinting efforts of the college are borne out by the fact that students enter the college as uncertain and bewildered but leave its campus as much more confident and focused.

Dr. Ruchi Yadav, an accomplished academic and researcher, serves as Assistant Professor III at the Amity Institute of Biotechnology, Amity University Uttar Pradesh, Lucknow. With over 15 years of teaching and research experience, she specializes in bioinformatics, computational biology, applied genomics, and proteomics. Her academic journey includes a Ph.D. in Biotechnology alongside M.Tech and M.Sc. degrees in Biotechnology and Bioinformatics.

Lucknow, the capital city of Uttar Pradesh, is emerging as a significant hub for biotechnology and bioinformatics, offering a wealth of opportunities for innovation, research, and industry growth. The city boasts a vibrant academic ecosystem, with renowned institutions such as the Indian Institute of Toxicology Research (IITR) and CIMAP, CDRI, Biotech Park which support cutting-edge research in biotechnology and life sciences.

The government of Uttar Pradesh has recognized the potential of the biotech and bioinformatics sectors, providing supportive policies and incentives to foster growth in these fields. Lucknow is also home to several biotech start-ups, research centres, and incubators, which are driving advancements in areas such as molecular biology, genomics, and pharmaceutical development.

The field of Bioinformatics, which integrates computer science with biology, is gaining momentum in Lucknow due to the city's growing focus on healthcare technology and data science. With increasing collaborations between academic institutions, research organizations, and the biotech industry, professionals in bioinformatics have access to an array of career opportunities, including data analysis, computational biology, and drug discovery.

Moreover, the city is well-connected to major biotech and pharmaceutical clusters in India, creating a dynamic environment for biotech professionals and researchers. As the biotechnology and bioinformatics sectors continue to grow, Lucknow is poised to become a key player in India's scientific and technological landscape, offering an exciting and fertile ground for innovation and career advancement in these fields.

Benefits of the Bioinformatics Seminar for Undergraduate Students

This seminar offers undergraduate students an excellent opportunity to explore the rapidly growing field of bioinformatics. Key benefits include:

1. Understanding an Interdisciplinary Field: Students will learn how bioinformatics integrates biology, computer science, and data analysis to solve biological and medical challenges.

2. Exposure to Cutting-Edge Tools: The seminar will introduce students to the latest technologies used in genomics, drug development, and data analysis, equipping them with relevant skills for future careers.

3. Career Pathways: Students will gain insights into diverse career opportunities in biotech, pharmaceuticals, and healthcare, helping them explore potential roles in research, data analysis, and more.

4. Practical Applications: Through case studies and discussions, students will learn how bioinformatics is applied to real-world problems, enhancing their problem-solving skills.

5. Networking Opportunities: The seminar offers chances to connect with industry experts, creating valuable networking opportunities for future internships or research roles.

Overall, the seminar will provide students with a solid foundation in bioinformatics, preparing them for future careers in this interdisciplinary and rapidly evolving field.