biotecnika
Your Bio Resource

BIOINFORMATICS WINTER INTERNSHIP

Hands-on Training In Global Research Tools & Techniques

ONLINE + OFFLINE

Duration: 30 Days Training
3, 6 & 12 Months Project

Exclusively Crafted For B.Sc., M.Sc., B.Tech M.Tech. B.Pharm, M.Pharm, & Ph.D. Students

GET WORK EXPERIENCE
STARTS - 25TH NOV 2024

Stores.biotecnika.org
Mail: info@biotecnika.org

Get ready to unlock the mysteries of life as the Bioinformatics Winter Internship 2024 is finally here! With the aim to foster the next generation of bioinformatics leaders, the internship program offers a unique opportunity for students and professionals alike to dive into the exciting world of computational biology. With hands-on training and guidance from seasoned professionals, interns will gain practical experience in cutting-edge techniques and tools used in bioinformatics. So, if you're ready to take your first steps toward a career in bioinformatics, join us for a journey of discovery, innovation, and growth!

Toll Free - 1800-1200-1818

www.Biotecnika.org

START DATE: 25TH NOV 2024

Session No.	Unit No. and Topic
UNIT-1: Introduction: Why Learn Bioinformatics?	
DAY-1	Ice-breaking Session on Bioinformatics Global Tools and Techniques
DAY-2	Scope & Opportunities in Bioinformatics: India & Abroad
DAY-3	Understanding Key Terminology in Bioinformatics Databases
UNIT-2: Dicephering molecules at the sub-molecular level	
Day 4	Carbohydrates and Proteins **Demo on tools: Cheminformatics**
Day 5	Lipids and Nucleic acids **Demo on tools: ChemDraw & ChemSketch**

Program Module

Session No.	Unit No. and Topics
	UNIT-3: Bioanalytics: Understanding the patterns of life
Day 6	Primary Sequences – DNA, RNA, and Proteins **Demo on tools: NCBI, EMBL, DDBJ, and SBI**
Day 7	Secondary Structures – DNA, RNA, and Proteins **Demo on tools: GORV, Swiss model, I-TASSER, Phyre2**
Day 8	Tertiary Structures – Stability, folding, and misfolding **Demo on tools: Protein Data Bank (PDB), EMBL and SBI**
Day 9	Biochemical and Metabolic pathway analysis **Demo on tools: KEGG database and Cytoscape**
	UNIT-4: Biocomputing- Computer-Aided Drug Design (CADD)
Day 10	Introduction, Drug discovery pipeline: Target identification and validation, Lead identification and optimization, Virtual screening **Demo: IMPPAT and Dr. Duke's Phytochemical and Ethnobotanical databases for Phytochemistry Research.**

Program Module

Day 11
ADMET Studies for the lead optimization.
Demo on tools: SWISS-ADME, Analysis,and Interpretation Boiled-Egg Model

Day 12
Introduction to protein and modelling concepts, types, homology modelling, and the ab-initio method.
Demo on tools: PDB tools, Swiss ExPaSy

DAY 13
Constructing a Phylogenetic Tree-
Demo on tools: ClustalW, Clustal Omega

DAY 14
QSAR Studies and Interpretation of Docking
Demo on Molecular docking software: Patchdock, Autodock, ClusPro web server

DAY 15
Introduction to Molecular Dynamics and Simulation (MDS).

Unit-5: Biomimetics: Driving Deeper

DAY 16
Pre-clinical (Bacterial, Fly, Plants, and Murine models), Human Clinical Trials for drug discovery, Functional genomics, and Comparative genomics.
Demo on the tool: Differential expression analysis on bacterial genome.

Program Module

Day 17 — Protein-protein interaction network, STRING, Network terminology, Pathway enrichment analysis
Demo on the tool: STRING and Cytoscape.

Day 18 — Human Genome project, Bacterial Genomics, Human Microbiome, and Epigenetics
Demo on database: Ensembl Bacteria, MicrobiomeDB

DAY 19 — Sanger sequencing, Next Generation Sequencing: DNA Sequencing, RNA Sequencing. miRNA Analysis.
Demo on the tool: Databases: dbSNP, Clinvar, Genome browsers: UCSC and Ensembl

Unit-6: Pening Down: Publish or Perish

DAY 20 — Publication types, formats, and journals
Demo on the tool: Elsevier, Springer, Wiley, MDPI, and Bentham Sciences

DAY 21 — Research made easy with Artificial Intelligence (AI & ML)
Demo on the tool: Applications of ChatGPT in BioResearch

DAY 22 — Selection of the journal and indexing
Demo on the tool: Journal finder

Program Module

Day 23	Submission, Revision, and re-submission process **Demo on tool: Editorial Manager**

Unit-7: Proposal Writing and Grant Submission

DAY 24	Structure and ingredients of proposal writing
DAY 25	Networking and funding from (govt./ private/ industrial partners)
DAY 26	Portals for grant submission and prerequisites
DAY 27	Generating primary data for proposal and funding

Unit-8: Launch Yourself

DAY 28	Generating ideas, Start-ups, and Bioenterpreunship
DAY 29	Live troubleshooting session
DAY 30	Open Discussion

About the Instructor

Ms. Nilofer K Shaikh , PhD

With a strong background in big data analysis using computational approaches in cancer omics data, Ms. Nilofer K Shaikh brings a wealth of experience from MIT ADT University. Her expertise spans cancer research, drug design, molecular dynamics simulation, data mining, and various omics technologies. Proficient in Python, R, and computational methodologies, she has a deep understanding of genomics, metabolomics, proteomics, transcriptomics, pharmacogenomics, and AI for cancer treatment. Her skillset also includes machine learning, MySQL database management, and natural language processing (NLP

About the Instructor

Dr. Dolly Sharma

Dr. Dolly Sharma is a distinguished expert in cheminformatics, drug design, and discovery, with a Ph.D. in Biotechnology from Amity University and an M.Tech. from Gautam Buddha University. Her groundbreaking research focuses on the design of biorelevant small molecules aimed at cancer treatment, which has led to the filing of three patents and the publication of over ten highly cited research papers.

Dr.. Sharma has made significant strides in drug design and discovery, particularly in the development of DNA origami-based nanodevices and the establishment of advanced synthesis methodologies. Her expertise and innovative approach have been recognized through the successful acquisition of research grants totaling ₹92 lakhs from DST SERB, DBT, and UPCST. Additionally, she has secured an impressive ₹55 lakhs from the DBT Wellcome Alliance and EMBO for organizing a key scientific event.

About the Instructor

Mr. Prodyot Banerjee

Prodyot Banerjee is a seasoned professional in Computer-Aided Drug Designing, Bioinformatics Analysis, and Genomics, boasting rich experience from institutions like CSIR-IGIB, CSIR-CLRl, IIT Madras, and Delhi Technological University.

With an M.Tech in Bioinformatics from Delhi Technological University, Prodyot has excelled in research and development roles, presenting his work at prestigious venues like IIT Kharagpur. His research is published in esteemed journals such as IEEE and Frontiers in Pharmacology, with more underway. Prodyot's GATE 2019 qualification from IIT Madras underscores his dedication to both academic excellence and professional growth. With a proven track record and relentless pursuit of knowledge, he is a valuable asset in bioinformatics, genomics, and computer-aided drug design endeavors.

About the Instructor

Dr. Elamathi Natrajan

Elamathi Natarajan is a dedicated bioinformatician with a robust background in computational biology, data analysis, and genomics. Holding a Doctorate in Bioinformatics from Dr. A.P.J Abdul Kalam Technical University and an MBA in Information Systems Management, she has made significant contributions to the field through both research and teaching.

She has served as an Assistant Professor and Head of Department (HOD) In-Charge at Kalinga University, Raipur, where she excelled in lecturing, research, and departmental management. At Biotecnika Info Labs Pvt Ltd, Bangalore, she played a key role in academic support, enhancing student success through coaching and program development.

Elamathi's expertise includes developing bioinformatics pipelines, conducting quality assessments, and applying machine learning algorithms to genomics data. Recognized for her work, including a Senior Research Fellowship from the Indian Council of Medical Research (ICMR), she continues to drive innovation in bioinformatics and is seeking a new challenge to further advance scientific discoveries.

Top Biopharma Companies Hiring in Bioinformatics Abroad

Illumina:

A leading developer of next-generation sequencing (NGS) technology. They hire bioinformaticians for roles in data analysis, software development, and product managemen

Google Health

A division of Google focused on developing healthcare technologies. They hire bioinformaticians for roles in drug discovery, genomics research, and machine learning.

Roche

A Swiss multinational pharmaceutical company. They hire bioinformaticians for roles in drug discovery, clinical research, and personalized medicine.

Johnson & Johnson

An American multinational pharmaceutical and medical devices company. They hire bioinformaticians for roles in drug discovery, clinical research, and data science

Pfizer

An American multinational pharmaceutical and biotechnology company. They hire bioinformaticians for roles in drug discovery, clinical research, and vaccines development.

Gilead Sciences

An American biopharmaceutical company that develops antiviral medications. They hire bioinformaticians for roles in drug discovery, clinical research, and regulatory affairs

Vertex Pharmaceuticals

An American biopharmaceutical company that develops treatments for cystic fibrosis and other rare diseases. They hire bioinformaticians for roles in drug discovery, clinical research, and personalized medicine.

Amgen

An American multinational biopharmaceutical company that develops and markets innovative human therapeutics. They hire bioinformaticians for roles in drug discovery, clinical research, and manufacturing.

Novartis

An American multinational pharmaceutical and biotechnology company. They hire bioinformaticians for roles in drug discovery, clinical research, and vaccines development.

Celgene

An American biopharmaceutical company that develops and markets treatments for cancer and inflammatory diseases. They hire bioinformaticians for roles in drug discovery, clinical research, and personalized medicine.

Bioinformatics is a rapidly growing field that combines biology, computer science, mathematics, and statistics to analyze and interpret biological data, particularly from genomics, proteomics, and other high-throughput technologies. As technology advances and biological data becomes increasingly abundant, the demand for bioinformatics professionals continues to rise. Here are some key points regarding the career scope in bioinformatics:

CAREER SCOPE in BIOINFORMATICS

Interdisciplinary Nature

Bioinformatics is inherently interdisciplinary, requiring professionals to have a solid understanding of both biological sciences and computational techniques. This opens up diverse career opportunities in research institutions, pharmaceutical companies, biotechnology firms, healthcare organizations, and academia.

Research Opportunities

Bioinformatics professionals are heavily involved in research aimed at understanding biological processes, such as genetics, evolution, disease mechanisms, and drug discovery. They work on projects ranging from genome sequencing and annotation to molecular modeling and systems biology

Your Bio Resource

Pharmaceutical and Biotechnology Industries

With the advancement of personalized medicine and the need for targeted drug development, pharmaceutical and biotechnology companies increasingly rely on bioinformatics to analyze large-scale biological data, identify drug targets, predict drug interactions, and optimize therapeutic outcomes.

Healthcare and Clinical Applications

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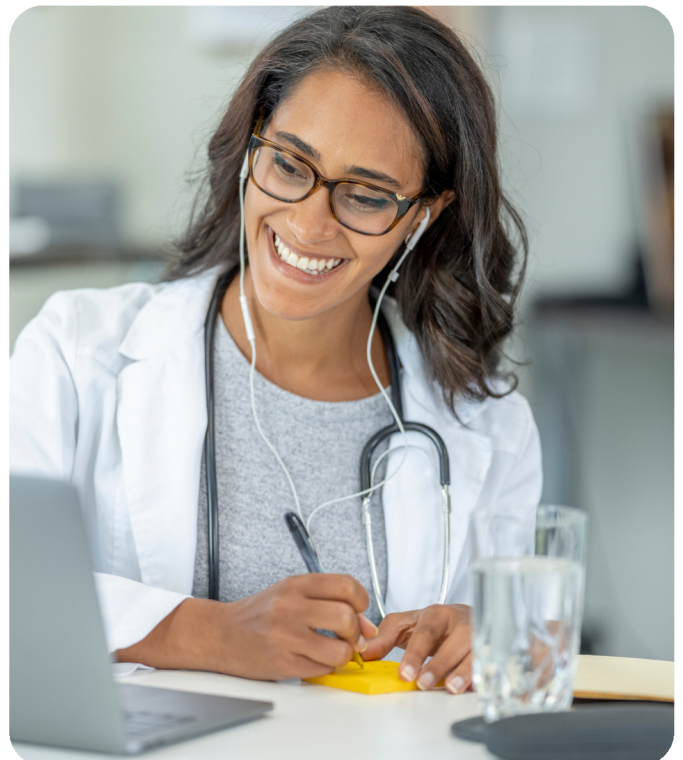
Academia and Education

Many bioinformatics professionals pursue careers in academia, where they teach courses, supervise research projects, and contribute to the advancement of knowledge in the field. They may also work in bioinformatics training programs and workshops to educate future generations of scientists

Data Science and Big Data Analytic

The skills acquired in bioinformatics, such as data mining, machine learning, and statistical analysis, are highly transferable to other fields, including data science and big data analytics. Bioinformatics professionals often find opportunities in industries outside of biology, such as finance, marketing, and cybersecurity.

Emerging Technologies

Rapid advancements in technologies like next-generation sequencing, single-cell analysis, and CRISPR-based genome editing continue to drive innovation in bioinformatics. Professionals in this field need to stay updated with the latest tools and methodologies to remain competitive and address new challenges in biological research.

Global Impact

Bioinformatics has a global impact on various aspects of human health, agriculture, environmental conservation, and biotechnology. Professionals in this field have the opportunity to contribute to groundbreaking discoveries and solutions to global challenges

Bioinformatics is a rapidly growing field that combines biology, computer science, mathematics, and statistics to analyze and interpret biological data, particularly from genomics, proteomics, and other high-throughput technologies. As technology advances and biological data becomes increasingly abundant, the demand for bioinformatics professionals continues to rise. Here are some key points regarding the career scope in bioinformatics:

How Will This Internship Help You? And What will you learn?

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✓ Interns will learn how to use bioinformatics tools and software to interpret complex biological data, and develop the skills necessary to design and implement their own computational pipelines.

✓ Dive into the refreshing side of science with 30 days, 3 months & 6 months of Bioinformatics training! Get a complete 360-degree approach to Bioinformatics with LIVE practicals, assignments & projects

✓ By the end of the program, interns will have gained hands-on experience with cutting-edge techniques and will be well-prepared to pursue a career in bioinformatics or related fields.

✓ Troubleshooting sessions with seasoned professionals will ensure you have all the support you need to explore this exciting field.

Whether you're a beginner or an experienced student, this internship program will give you a chance to sharpen your skills, learn from the best in the business, and gain hands-on experience with the latest bioinformatics tools and software. So, join us for a journey of discovery, growth, and fun!

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