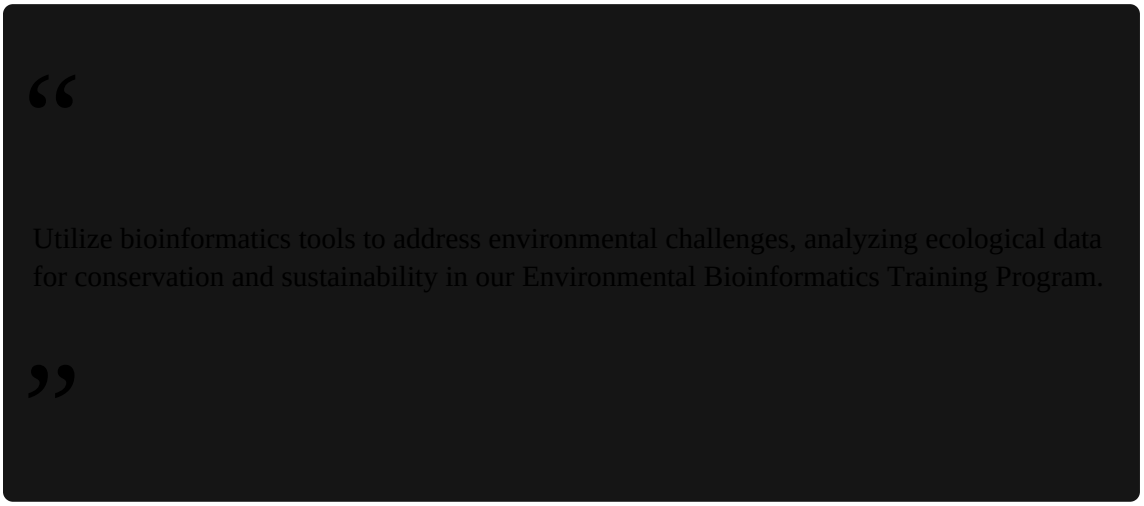
Environmental Bioinformatics Training Program



NTHRYS provides Environmental Bioinformatics Training Program at its Hyderabad facility, Telangana. Please refer below for more details including Fee strctures, Eligibility, Protocols and Modules etc.,. Please do call / message / whatsapp for more details on +91-7993084748. Eligibility: BSc / BTech / MSc / MTech / MPhil / PhD in relevant field studying or completed students.

What do NTHRYS Provide in Environmental Bioinformatics Training Program
Accommodation Assistance

Please communicate with our Academic Services Department via whatsapp on +91-7993084748 for any queries.

Modules

Module 1: Data Acquisition and Management
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This module introduces the fundamental techniques for acquiring and managing environmental bioinformatics data, crucial for effective analysis and research.

- Data Collection Techniques - understanding data sources and collection methods (QGIS,

Google Earth)
- Database Management - principles of database setup and maintenance for environmental data (MySQL, PostgreSQL)
- Data Cleaning - methods for preprocessing and cleaning environmental datasets to ensure accuracy and reliability (Python Pandas, R)
- Data Integration - combining data from various sources to create comprehensive datasets (KNIME, Talend)

Duration: 4 Weeks

Fee Structure: Rs 25000

Module 2: Bioinformatics Sequence Analysis
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This module focuses on the analysis of biological sequences, which is pivotal for understanding genetic and microbial diversity in environmental studies.

- Sequence Alignment - techniques for aligning DNA, RNA, or protein sequences to identify regions of similarity that may be a consequence of functional, structural, or evolutionary relationships (BLAST, ClustalW)
- Phylogenetic Analysis - constructing phylogenetic trees to explore the evolutionary relationships between sequences (MEGA, PhyML)
- Metagenomics Analysis - analyzing genetic material recovered directly from environmental samples (QIIME, MOTHUR)
- Genome Assembly - assembling short sequencing reads into longer contiguous sequences (SPAdes, Velvet)

Duration: 4 Weeks

Fee Structure: Rs 45000

Module 3: Advanced Data Analysis and Visualization
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This module delves into advanced techniques for analyzing and visualizing environmental bioinformatics data, enhancing understanding and decision-making.

- Statistical Analysis of Environmental Data - applying statistical methods to analyze and interpret complex datasets (R, Python)
- Geospatial Analysis - using GIS tools to analyze and visualize spatial data related to environmental studies (ArcGIS, QGIS)
- Machine Learning in Bioinformatics - leveraging AI and machine learning to predict environmental impacts and biological interactions (TensorFlow, scikit-learn)
- Network Analysis - constructing and analyzing interaction networks within ecosystems (Cytoscape, Gephi)

Duration: 4 Weeks

Fee Structure: Rs 45000

Module 4: Environmental Omics Technologies
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This module covers the application of omics technologies in environmental bioinformatics, providing insights into the molecular mechanisms influencing ecosystems.

- Transcriptomics - studying RNA and gene expression patterns to understand organismal responses to environmental changes (RNA-seq, Illumina sequencing platforms)
- Proteomics - analyzing the protein compositions of environmental samples to decipher functional dynamics in ecosystems (mass spectrometry, LC-MS/MS)
- Metabolomics - examining the chemical fingerprints that cellular processes leave behind in environmental samples (GC-MS, NMR spectroscopy)
- Integrative Omics - combining various omics approaches to obtain a holistic view of environmental impacts and adaptations (multi-omics integration tools)

Duration: 4 Weeks

Fee Structure: Rs 45000

Module 5: Bioinformatics in Climate Change Studies
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This module applies environmental bioinformatics to study the impacts of climate change on biological systems, focusing on adaptation and mitigation strategies.

- Climate Change Genomics - identifying genetic adaptations to climate change in various species (genome-wide association studies, GWAS)
- Modeling and Simulation of Ecological Responses - using bioinformatics to predict ecological shifts due to climate variables (ecological niche modeling tools, MaxEnt)
- Bioinformatics in Carbon Sequestration Studies - exploring microbial and plant genomes for traits that enhance carbon capture (database mining, functional genomics)
- Impact Analysis of Climate Change on Biodiversity - utilizing large datasets to understand biodiversity shifts (biodiversity informatics platforms, GBIF)

Duration: 6 Weeks

Fee Structure: Rs 65000

Module 6: Regulatory and Ethical Considerations
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This module addresses the ethical, legal, and social implications (ELSI) of conducting environmental bioinformatics research, emphasizing responsible data handling and reporting.

- Data Privacy and Security - understanding the importance of protecting sensitive environmental data (guidelines on data security, GDPR compliance tools)
- Regulatory Compliance - adhering to international standards and regulations in environmental research (ISO 14001, environmental management systems)
- Intellectual Property Rights - navigating the complexities of patents and copyrights in bioinformatics (legal databases, intellectual property management software)
- Ethical Research Practices - ensuring ethical conduct in bioinformatics research, particularly when it involves genetically modified organisms or vulnerable ecosystems (ethical review boards, compliance software)

Duration: 2 Weeks

Fee Structure: Rs 19000

Module 7: Future Trends and Technologies
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Exploring the frontier of environmental bioinformatics, this module provides insights into future trends that will influence research and applications in the field.

- Next-Generation Sequencing (NGS) Innovations - advancements in sequencing technologies that provide higher resolution, speed, and cost-effectiveness (Illumina NovaSeq, Oxford Nanopore)
- Artificial Intelligence and Machine Learning - how AI is transforming data analysis in environmental studies (deep learning platforms, AI integration tools)
- Citizen Science and Big Data - leveraging public participation in data collection and the use of big data in environmental monitoring (mobile apps, cloud-based platforms)
- Synthetic Biology and Environmental Engineering - using bioinformatics to design organisms that can remediate environmental issues (gene editing tools like CRISPR, synthetic biology kits)

Duration: 6 Weeks

Fee Structure: Rs 75000

Note: The NTHRYS Team reserves the right to alter the software or tools mentioned in the course modules at any time without prior notice, to best suit the educational needs and ensure the most up-to-date training environment.

Please choose a suitable time slot and inform our team via WhatsApp on +91-8977624748 (located at the top right corner) to receive the payment link for fee payment and slot confirmation.