



SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY

(DEEMED TO BE UNIVERSITY)

Accredited "A" Grade by NAAC | 12B Status by UGC | Approved by AICTE

www.sathyabama.ac.in

**School of Bio and Chemical Engineering
Department of Bioinformatics**

Date: June 24, 2019

Students Circular

Ref No: SIST / Bioinfo / ODD - Sem / VAC / June 24, 2019

Dear Students,

This is to inform you that the following courses are being offered to students under the value-added certificate courses category for this academic year. Students belonging to the III Yr, B.Tech, I and II nd Yr. MTech, III of B. Sc and I and II year of M. Sc are welcome to enroll in these courses. The duration of every course is 30 hours. On completion of the course, you will obtain a certificate of accomplishment.

S. No	Name of the course	Faculty Coordinator
1	Basics of MATLAB (September 02 – October 25, 2019)	Dr. Swetha Sunkar
2	Data skills for Bioinformatics (Nov 04 - Dec 05th 2019)	Dr. D. Alex Anand.
3	Introduction to Mathematics for Computational Biology (Jan 20, 2020 - Feb 07, 2020)	Dr. Kirubashankar

Venue

Biocomputing Lab, Department of Bioinformatics.

The last date for enrollment is - Closes 07 days before the start of each course

HOD

Dr.H.Jemmy christy

Copy to

School of Bio and Engineering classrooms

Heads of School of Bio and Engineering classrooms

HEAD OF THE DEPARTMENT
DEPARTMENT OF BIOINFORMATICS
SATHYABAMA
INSTITUTE OF SCIENCE AND TECHNOLOGY
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Department of Bioinformatics &
The Centre for Molecular Data Science and Systems Biology

Presents

BASICS OF MATLAB - A WORKSHOP



September 02 – October 25, 2019

FACULTY CO - ORDINATOR - DR. SWETHA SUNKAR

Basics of Matlab (September 02 – October 25, 2019)
(30 module Course)

Module 1	Bioinformatics Toolbox Product Description
Module 1	Matlab - Overview
Module 2	Installation
Module 3	Data Formats and Databases
Module 4	Sequence Alignments
Module 5	Sequence Utilities and Statistics
Module 6	Protein Property Analysis
Module 7	Phylogenetic Analysis
Module 8	Microarray Data Analysis Tools
Module 9	Microarray Data Storage
Module 10	Mass Spectrometry Data Analysis
Module 11	Graph Theory Functions
Module 12	Graph Visualization
Module 13	Statistical Learning and Visualization
Module 14	Prototyping and Development Environment
Module 15	Data Visualization
Module 16	Algorithm Sharing and Application Deployment
Module 17	Exchange Bioinformatics Data Between Excel and MATLAB
Module 18	Get Information from Web Database – Get functions
Module 19	High throughput sequence analysis
Module 20	Working with Large Multi-Entry Text Files
Module 21	Identifying Differentially Expressed Genes from RNA-Seq Data
Module 22	Exploring Protein-DNA Binding Sites from Paired-End ChIPSeq Data
Module 23	Exploring Genome-wide Differences in DNA Methylation Profiles
Module 24	Exploring a Nucleotide Sequence Using Command Line
Module 25	Microarray analysis - Managing Gene Expression Data in Objects
Module 26	Representing Expression Data Values in Data Matrix Objects
Module 27	Representing Experiment Information in a MIAME Object
Module 28	Visualizing Microarray Images
Module 29	Analysing Gene Expression Profiles
Module 30	Overview of Phylogenetic Analysis

Basics of Matlab (September 02 – October 25, 2019)

S. No	Nam e
1.	ARPAN JOSHI
2.	EDA ARTHI
3.	DEVISHRI. G
4.	GOKUL. T
5.	GOUTHAM KRISHNA. B
6.	HARIHARAN. V
7.	HEMAKIRAN. M.B
8.	MARY VINCY. J
9.	NAMRATA KOLLURI
10.	NISHA. S
11.	NITEESHA ADAPALA
12.	PAVAN KUMAR GUNDA
13.	RAKESH. I
14.	RESHMA. K
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32.	SELVI S
33.	S. SAIVARSHINI
34.	SATHYA
35.	DESAM NEEHARIKA
36.	BASHYAM PRANEETHA
37.	ANANYA BAJPAI
38.	JAMALPUR NAVEEN KUMAR
39.	JAMALPUR NAVEEN KUMAR
40.	SURYANI GUHA
41.	SWARALIPi MITRA
42.	REFANA SHAHUL
43.	JAISHEELA VIMALI I

Basics of Matlab - Report

For Next Generation Sequencing (NGS), microarray analysis, mass spectrometry, and gene ontology, Bioinformatics Toolbox™ offers techniques and applications. You may read genomic and proteomic data from common file formats including SAM, FASTA, CEL, and CDF as well as from online databases like the NCBI Gene Expression Omnibus and GenBank by using toolbox functions. With the help of clustergrams, spatial heatmaps, and sequence browsers, you may study and display this data. Additionally, the toolbox includes statistical methods for peak detection, imputing values for missing data, and feature selection.

To support common bioinformatics workflows, you can mix toolbox functions. You may classify protein profiles using mass spectrometry data, detect copy number variations and SNPs in microarray data, analyse RNA-Seq data to find differentially expressed genes, and identify transcription factors using ChIP-Seq data.

This course attempts to introduce you to the fundamentals of Matlab. In order to give you the confidence to begin utilising Matlab in your own work, we will take a practical approach over the two days of instruction. In particular, we'll demonstrate both how to use pre-written functions and how to develop your own scripts and functions. We will also look at the various ways that Matlab users might get assistance. In order to help you build scripts that are more effective, we will also cover several fundamental computer programming concepts in Matlab.

Prerequisites

There are no prerequisites for this course, and prior programming experience is not required to enrol.

The course is not designed for seasoned Matlab users, although participants should ideally plan to utilise Matlab soon following the session.

Department of Bioinformatics &
The Centre for Molecular Data Science and Systems Biology

Basics of Matlab - 2019

A workshop

CERTIFICATE OF PARTICIPATION

THIS IS TO CERTIFY THAT

PAVAN KUMAR GUNDA

has participated in the Hands on Training workshop on "MATLAB for Bioinformatics - 2019" that was held from the September 02 - October 25, 2019.



DR. JEMMY CHRISTY

HEAD, DEPARTMENT OF BIOINFORMATICS



DR. T. SASIPRABA

VICE CHANCELLOR



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Venue

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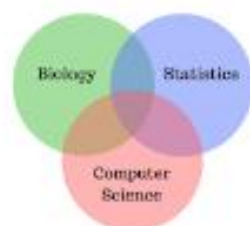


Department of Bioinformatics & The Centre for Molecular Data Science and Systems Biology

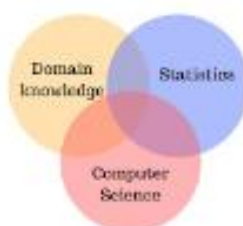
Presents

Data skills for Bioinformatics - 2019 *A Hands on Workshop*

Bioinformatics



Data Science



Nov 04 - Dec 05th 2019

FACULTY CO - ORDINATORS - DR. D. ALEX ANAND / DR. ASHOK KUMAR

Data skills for Bioinformatics (Nov 04 - Dec 05th 2019)
Course Coordinator - Dr D Alex Anand / Dr. Ashok Kumar

DAY	DATE	TOPIC COVERED	FACULTY IN-CHARGE
Day 1	04-11-2019	Computational Biology Research - Gene Expression	Dr. D. Alex Anand
Day 2	05-11-2019	Sequence analysis: Learn the use of BLAST	Dr. Ashok Kumar
Day 3	06-11-2019	DNA Sequence Alignment Practice Exercise/Test	Dr. D. Alex Anand
Day 4	07-11-2019	Whole-Transcriptome RNA-Seq Data Analysis using Linux	Dr. Ashok Kumar
Day 5	08-11-2019	Introduction to programming for Bioinformatics with Python	Dr. D. Alex Anand
Day 6	09-11-2019	Genetics and Next Generation Sequencing for Bioinformatics	Dr. Ashok Kumar
Day 7	11-11-2019	Learn Docking & Molecular Dynamics Simulation From Scratch	Dr. D. Alex Anand
Day 8	12-11-2019	Retrieving and downloading Bioinformatics Data.	Dr. Ashok Kumar
Day 9	13-11-2019	Data Integrity. SHA and MD5 Checksums.	Dr. D. Alex Anand
Day 10	14-11-2019	Case Study: Reproducibly Downloading Data.	Dr. Ashok Kumar
Day 11	15-11-2019	Datasets for genomics	Dr. D. Alex Anand
Day 12	16-11-2019	Next Generation Sequencing technologies.	Dr. Ashok Kumar
Day 13	18-11-2019	Genome Analysis Toolkit (GATK)	Dr. D. Alex Anand
Day 14	19-11-2019	How hierarchical clustering and decision trees would be useful in any bioinformatics role.	Dr. Ashok Kumar
Day 15	20-11-2019	Understand the role of computation and data mining in hypothesis-driven processes within the life sciences	Dr. D. Alex Anand
Day 16	21-11-2019	Know how to access gene expression data	Dr. D. Alex Anand
Day 17	22-11-2019	Be able to use bioinformatics tools to analyze gene expression data	Dr. Ashok Kumar
Day 18	23-11-2019	Know how to access gene expression data with UniGene	Dr. D. Alex Anand
Day 19	25-11-2019	Virtual Screening for Drug Discovery	Dr. Ashok Kumar
Day 20	26-11-2019	Structural Bioinformatics Basics	Dr. D. Alex Anand
Day 21	27-11-2019	Manage your bioinformatics project with the Git version control system	Dr. Ashok Kumar
Day 22	28-11-2019	Tackle tedious data processing tasks with Bash scripts and Makefiles	Dr. D. Alex Anand
Day 23	29-11-2019	Develop R packages	

Day 24	30-11-2019	Designed the NGS based cancer diagnostics	Dr. D. Alex Anand
Day 25	02-12-2019	Integrated DNA-seq and RNA-seq data for variant	Dr. Ashok Kumar
Day 26	03-12-2019	Domain specific statistical tools and data visualization	Dr. D. Alex Anand
Day 27	04-12-2019	Data wrangling: data processing, formatting and transformation	Dr. Ashok Kumar
Day 28	05-12-2019	Data visualization and communication	Dr. D. Alex Anand
Day 29	06-12-2019	Domain specific data processing and quality check	Dr. Ashok Kumar
Day 30	07-12-2019	Storage and retrieval of data	Dr. D. Alex Anand

Data skills for Bioinformatics (Nov 04 - Dec 05th 2019)
 Course Coordinator - Dr D Alex Anand / Dr. Ashok Kumar

S. No	Name
1.	S. PRIYA DHARSHINI
2.	SOUNDARIA GNANAVEL
3.	KUMAR SUBHAM
4.	SOUNDARYA K
5.	M.DEEPA
6.	M.DEEPA
7.	PRATYUSHA NAYAK
8.	ANANDHI.A
9.	ANANDHI.A
10.	M.SOWMIYA
11.	S GAYATHRI
12.	SANGHAMITRA CHAKRABORTY
13.	D.POOJA
14.	S. PAVITHRA
15.	R DAYANA
16.	S. RAJAKUMARI
17.	K. INDHUMATHI
18.	SUBHA.K
19.	DR. M. LYDIA RAJAKUMARI
20.	R. PREETHA
21.	S. PRIYA DHARSHINI
22.	SOUNDARIA GNANAVEL
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Data skills for Bioinformatics (Nov 04 - Dec 05th 2019)

Report

Discover the data skills required to transform big sequencing datasets into reliable and repeatable biological discoveries. With the help of this hands-on class, you'll discover how to use freely downloadable open-source tools to interpret sizable, complex biological information. Our capacity to comprehend the intricacies of existence has never depended so much on our ability to manipulate and interpret data. The fundamental computational and statistical abilities required to evaluate biological data are covered in this intermediate-level text. You're prepared to begin if you've worked with a scripting language like Python. But even if you haven't been orientated yet, we'll start the training with the fundamentals.

The simplest approach to study bioinformatics is through data skills, which make use of tried-and-true open-source tools that are still the finest means of manipulating and examining evolving data. This strategy has stood the test of time: when high-throughput sequencing first appeared, the field of bioinformatics underwent a rapid transition, but proficient bioinformaticians quickly adjusted to the new data by applying the same techniques and abilities. After all, next-generation data was just more and different data, and master bioinformaticians possessed the necessary skills to use this new data to address problems with their tools. The Bioinformatics Data Skills programme will train you in these fundamental tools and assist you in acquiring the same abilities.



SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY

Department of Bioinformatics &
The Centre for Molecular Data Science and Systems Biology

**HANDS ON TRAINING ON
DATA SKILLS FOR BIOINFORMATICS**

CERTIFICATE OF PARTICIPATION

THIS IS TO CERTIFY THAT

ANANDHI.A

has participated in the "Hands on Training on Data skills for Bioinformatics"
that was held from the November 04 - December 05, 2019 .

A handwritten signature in black ink, likely belonging to Dr. V. Ramesh Kumar.

DR. V. RAMESH KUMAR
CONVENER

A handwritten signature in black ink, likely belonging to Dr. Jemmy Christy.

DR. JEMMY CHRISTY
HEAD, DEPARTMENT OF BIOINFORMATICS

A handwritten signature in green ink, likely belonging to Dr. T. Sasipraba.

DR. T. SASIPRABA
VICE CHANCELLOR



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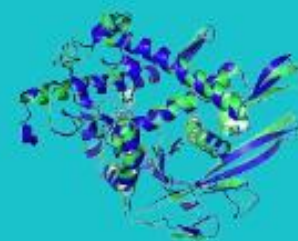
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Department of Bioinformatics &
The Centre for Molecular Data Science and Systems Biology

Presents

INTRODUCTION TO MATHEMATICS FOR COMPUTATIONAL BIOLOGY - 2020



Jan 20, 2020 - Feb 07, 2020

FACULTY CO - ORDINATOR - DR KIRUBASHANKAR

Introduction to Mathematics for Computational Biology

Course Coordinator - Dr D Alex Anand (Jan 20, 2020 - Feb 07, 2020)

Faculty – in – charge – Dr Kirubashankar

Workshop – Day wise schedule

(Sessions will be 2 hours each that will include initial theory followed by hands – on components)

Date	Topic
January 20, 2020	Early history and recent Growth
January 21, 2020	Abstract relational biology
January 22, 2020	Algebraic biology
January 23, 2020	Complex systems biology
January 24, 2020	Computer models and automata theory
January 25, 2020	Modeling cell and molecular biology
January 27, 2020	Modelling physiological systems
January 28, 2020	Computational neuroscience
January 29, 2020	Evolutionary biology
January 30, 2020	Mathematical biophysics
January 31, 2020	Mathematical methods
February 01, 2022	Model example: the cell cycle
February 03, 2022	Mathematical and theoretical Biology
February 06, 2022	Research groups and Thrust areas in India and abroad
February 07, 2022	Summary of the workshop, conclusion and certificate Distribution

Introduction to Mathematics for Computational Biology

Course Coordinator - Dr D Alex Anand (Jan 20, 2020 - Feb 07, 2020)

Faculty – in – charge – Dr Kirubashankar

S. No	Name
1.	ARPAN JOSHI
2.	EDA ARTHI
3.	DEVISHRI. G
4.	GOKUL . T
5.	GOUTHAM KRISHNA. B
6.	HARIHARAN. V
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Introduction to Mathematics for Computational

Biology 2019 / 2020 – Report

Mathematical and computational methods are critical to conduct research in many areas of biology, such as genomics, molecular biology, cell biology, developmental biology, neuroscience, ecology and evolution. Conversely, biology is providing new challenges that drive the development of novel mathematical and computational methods. This workshop brings together experts to present and discuss recent development of mathematical methods that arise in biological sciences. The topics include algebraic biology, deterministic, stochastic, hybrid, multiscale modelling methods, as well as analytical and computational methods.



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**HANDS ON WORKSHOP ON
INTRODUCTION TO MATHEMATICS FOR COMPUTATIONAL BIOLOGY**

CERTIFICATE OF PARTICIPATION

THIS IS TO CERTIFY THAT

RAKESH. I

has participated in the Hands on Training on "Introduction to Mathematics for Computational Biology" that was held from the 20th January 2020 - February 07, 2020 .

DR. V. RAMESH KUMAR
CONVENER

DR. JEMMY CHRISTY
HEAD, DEPARTMENT OF BIOINFORMATICS

DR. T. SASIPRABA
VICE CHANCELLOR