



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: January 23, 2021

STUDENTS CIRCULAR

Ref No: SIST / Bioinfo / Odd - Sem / VAC / January 23, 2021

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 I year to the 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	Effective communication skills (Sep-Oct 15th 2021)	Dr. Jemmy Christy
2	NGS Data Analytics - Workshop (Nov-Dec 15th 2021)	Dr. Swetha Sunkar
3	Computational Chemistry - A workshop (Jan - Feb 2022)	Dr. D. Alex Anand.
4	Data skills for Bioinformatics (Mar-Apr 2022)	Dr. Ashok Kumar
5	Introduction to Mathematics for Computational Biology (Apr-May 2022)	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

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Heads of School of Bio and Engineering classrooms

HEAD OF THE DEPARTMENT
DEPARTMENT OF BIOINFORMATICS
SATHYABAMA
INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)
Jeppiaar Nagar, Rajiv Gandhi Salai
Chennai - 600 149

EFFECTIVE COMMUNICATION SKILLS - 2021
LANGUAGE LAB for English – Beginner to Advanced September

21st – November 3rd 2021

Day	Module	Topic
21-9-2021	Module 1	Module objectives and outcomes
22-9-2021	Module 2	Speaking for better communication
23-9-2021	Module 3	Speaking about Myself
24-9-2021	Module 4	Sharing Personal Information
25-9-2021	Module 5	Speaking accurately
27-9-2021	Module 6	Pronouncing Diphthongs accurately
28-9-2021	Module 7	Working with silent letters
29-9-2021	Module 8	Poem for Stress Practice
30-9-2021	Module 9	Practice for Public Speaking
1-10-2021	Module 10	Practicing for Language Debate
4-10-2021	Module 11	Speaking Extempore
5-10-2021	Module 12	Structure of Debate
6-10-2021	Module 13	Qualities necessary for Effective Presentation
7-10-2021	Module 14	Taking Part in Group Discussions
8-10-2021	Module 15	Extempore Speech: My Favorite Speech
9-10-2021	Module 16	Speaking Extempore Effective Strategies
11-10-2021	Module 17	Making an Apology
20-10-2021	Module 18	Asking for Clarifications
21-10-2021	Module 19	Describing Objects - Pictures
22-10-2021	Module 20	Describing Objects - Descriptions
23-10-2021	Module 21	Practicing Narrative Skills : Story and Event
25-10-2021	Module 22	Reporting on an Event - Video
26-10-2021	Module 23	Guidelines on the Language of Reporting
27-10-2021	Module 24	Social Communication
28-10-2021	Module 25	Performing Language Functions
29-10-2021	Module 26	List of Useful Expressions
30-10-2021	Module 27	Shapes to Describe
1-11-2021	Module 28	Defining with Illustrations
2-11-2021	Module 29	Speaking Across the Curriculum
3-11-2021	Module 30	Matching the Definitions

Coordinators: Dr Jemmy Christy & Dr. Monica (Department of English)



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

Presents

Effective communication skills - 2021



September 21 – November 3rd 2021

Faculty Co - ordinators - Dr. Jemmy Christy & Dr. Monica (Department of English)



COL. Dr. JEPPIAAR
Founder Chancellor



Dr. Mariazeena Johnson
Chancellor



Dr. Marie Johnson
President



Mr. J. Arul Selvan
Vice President



**Ms. Maria Bernadette
Tamilarasi Johnson**
Vice President



**Ms. Maria Catherine
Jayapriya**
Vice President

Organizing Members - Dr. Jemmy Christy | Dr. Swetha Sunkar | Dr. D. Alex Anand
Department of Bioinformatics, SIST

Facilitated by - The Students & Faculty, Department of Bioinformatics & CMDSSB

Effective Communication Skills
Language Lab for English – Beginner to Advanced

September 21 – Nov 3rd 2021

S. No	Name
1.	Ajay Kumar S
2.	Balasubramani T
3.	Enos Jadlin G
4.	Hafsa Fathima.K
5.	Jerusha R
6.	Mahadevan N
7.	D Midhun Kumar
8.	Nithish R
9.	Niveditha P
10.	Priyadharshini.M
11.	Ranjini
12.	Ranjith.R
13.	Ridhan. R
14.	S.Shreeprasath
15.	Sowndharya S
16.	Sruthi S
17.	Viswa B
18.	Harsiddhi.A
19.	Tejasree K
20.	Jey Priya S
21.	Aswin Promod M
22.	Akash D
23.	Humaira Thusneem S
24.	Subhiksha N Iyer
25.	Karthika.R
26.	Murugulla Raghavendra
27.	Nethaji. A
28.	K.S.Ganesh
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30.	Barath.R
31.	Nivetha R
32.	Rohini
33.	Aswiny A.R
34.	Gadiyaram Radha Priya
35.	V. Mohan Rao
36.	Milind Joseph
37.	S.Saranya
38.	Aqueeno
39.	Ambritha. C
40.	Amrit Wilkhu
41.	Anitha. V
42.	Aswini Sai Balaji
43.	Bagavathy Darshan. M

44.	Potti Bhoomika Lekhya
45.	Bhuvanesh. P
46.	Britlin Deva Jebasta. N
47.	Chandini Sengupta
48.	Deeksha. R. V
49.	Devipriya. V
50.	Dhana Sri. C . K

Effective Communication Skills - Report

Getting your message across in a way that is clear and coherent is a critical skill in your professional and personal life. This workshop identifies the necessary ingredients of any conversation. Learn to be a better communicator by exploring the communication process and how different communication styles affect your personal style.

This workshop is idea for students and research scholars.

Through Communicate with Others, you will:

- Become a better communicator by examining the four key ingredients to any conversation
- Appreciate the art of conversation through the role of speaker, listener and observer
- Create the best possible climate for communicating through empathy, asking the right questions and understanding the person's viewpoint
- Understand how non-verbal communication and feedback influence how your message comes across

SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY

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

Effective Communication Skills - Writeup - 2022

CERTIFICATE OF PARTICIPATION

This is to certify That

JERUSHA R

has participated in the Hands on Training workshop on "Effective Communication Skills - Writeup - 2022" that was held from the 21st September to the Nov 3rd 2021.

DR. V. RAMESH KUMAR

DR. JEMMY CHRISTY

DR. T. SASIPRABA



Convener

HEAD, DEPARTMENT OF BIOINFORMATICS

Vice Chancellor



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

Presents

NGS DATA ANALYTICS



08th November - 10th December, 2022

FACULTY CO - ORDINATOR - DR SWETHA SUNKAR



COL. Dr. JEPPIAAR
Founder Chancellor

Dr Mariazeena Johnson
Chancellor

Dr Marie Johnson
President

Mr J Arul Selvan
Vice President

Ms. Maria Bernadette
Tamilarsi Johnson
Vice President

Ms. Maria Catherine
Jayapriya
Vice President

Organizing Members - Dr Jemmy Christy | Dr Swetha Sunkar | Dr D Alex Anand,
Department of Bioinformatics, SIST

Ngs Data Analytics – Workshop Nov 8th - Dec 10th, 2021

List Of Participants

S.No	Name
1.	Angara Sree Thriveni Samhitha
2.	Arun. P
3.	Aswini. T
4.	Diksha .S
5.	Guda Deepak Reddy
6.	Hamsa Priyaa. M
7.	Iswarya. S.V
8.	Kameshwaran. T
9.	Kesavapriya. R
10.	Lizi Berciya.J
11.	Mary Portia.J
12.	Meenakshi.D
13.	Nilofar.A
14.	Ranjith.B.K
15.	Rithik Rishi.C.S
16.	Samhitha.S
17.	Santhosh.S
18.	Shyla Nancy. J
19.	Snekha.B
20.	Srinidhin.S
21.	Sumesh.S
22.	Sushma.T.A
23.	Sutharsanan.S
24.	Bavya Keerti M
25.	Vaishnavi S
26.	Rajkumar R

27.	Jaswanth Narayana R
28.	Anantha Reddi Yaswanth A
29.	Vishesh K
30.	Ambritha. C
31.	Amrit Wilkhu
32.	Anitha. V
33.	Aswini Sai Balaji
34.	Bagavathy Darshan. M
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39.	Deeksha. R. V
40.	Devipriya. V
41.	Dhana Sri. C . K
42.	Dhatchayani. K
43.	Divya. K
44.	Edwin Vines Raj. M
45.	Ganesh. S
46.	Gowshik. T
47.	Jeevika. R
48.	Jesse Miracline Bincy. D
49.	Joel. K. Senu
50.	Joevathy. J

NGS Data Analytics

Nov 8 to Dec 10th, 2021

Days	Date	Topics Covered	Faculty-In-Charge
1-3	8-11-2021 to 10-11-2021	Introduction to Unix/Linux & running workflows	Dr. Alex Anand
4-7	11-11-2021 to 15-11-2021	Introduction to NGS Technologies	Dr. Swetha Sunkar
8-11	16-11-2021 to 19-11-2021	NGS data pre-processing and QC	Dr. Jemmy Christy
12-15	20-11-2021 to 23-11-2021	Alignment to reference sequences	Dr. Jemmy Christy
16-19	24-11-2021 to 27-11-2021	Variant calling and annotation	Dr. Alex Anand
20-23	29-11-2021 to 2-12-2021	ChipSeq	Dr. Swetha Sunkar
24-26	3-12-2021 to 6-12-2021	RNASeq	Dr. Jemmy Christy
27-30	7-12-2021 to 10-12-2021	Genome assembly	Dr. Alex Anand

Next Generation Sequencing Workshop

Report

Next-generation sequencing (NGS) technologies are now a crucial component of practically all life sciences research and diagnostics. NGS data are often processed by qualified bioinformaticians because to their volume and, more importantly, complexity. This is also a serious issue for experienced professionals in life sciences who have never studied NGS because it is too new and must suddenly adapt to completely new tools, workflows, and scientific terminology, not to analyse NGS data themselves (after all, that is why we have bioinformaticians), but to ask the right questions and understand the results.

Our session will teach you the fundamentals of NGS data processing. Its purpose is to teach students how to perform the fundamental processes of NGS data analysis, such as raw data manipulation, quality control, and the elimination of low-quality sequences, sequence adapters, artefacts, or other contamination. The end result should be complete mastery of the process, with the output being a set of high-quality data that can be used for further analysis.

You will become acquainted with numerous NGS data formats, learn about the specific benefits and drawbacks of sequencing technologies and how to cope with them, and gain an understanding of the history of individual techniques used to change NGS data. You will not become a bioinformaticist after this three-day training, but you will be well on your way to being a qualified partner for bioinformaticists on your team.

SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY

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

Next Generation Sequencing Workshop - 2022

CERTIFICATE OF PARTICIPATION

This is to certify That

GUDA DEEPAK REDDY

has participated in the Hands-on Training workshop on "Next Generation Sequencing" that was held from the 08th November to 10th December, 2022

DR. V. RAMESH KUMAR

DR. JEMMY CHRISTY

DR. T. SASIPRABA



Convener

HEAD, DEPARTMENT OF BIOINFORMATICS

Vice Chancellor



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4	Data skills for Bioinformatics (Mar-Apr 2022)	Dr. Ashok Kumar
5	Introduction to Mathematics for Computational Biology (Apr-May 2022)	Dr. Kirubashankar

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

Presents

COMPUTATIONAL CHEMISTRY



03rd January - February 10, 2022

FACULTY CO-ORDINATOR – DR.D. ALEX ANAND



COL. Dr. JEPPIAAR
Founder Chancellor



Dr. Mariazeena Johnson
Chancellor



Dr. Marie Johnson
President



Mr. J. Arul Selvan
Vice President



Ms. Maria Bernadette
Tamarasi Johnson
Vice President



Ms. Maria Catherine
Jayapriya
Vice President

Organizing Members - Dr. Jemmy Christy | Dr. Swetha Sunkar | Dr. D. Alex Anand,
Department of Bioinformatics, SIST

Facilitated by - The Students & Faculty, Department of Bioinformatics & CMDSSB

**Computational Chemistry –
Workshop Student Namelist**

**Jan 3 – Feb 10,
2022**

S. No	Name
1.	Angara Sree Thriveni Samhitha
2.	Arun. P
3.	Aswini. T
4.	Diksha .S
5.	Guda Deepak Reddy
6.	Hamsa Priyaa. M
7.	Iswarya. S.V
8.	Kameshwaran. T
9.	Kesavapriya. R
10.	Lizi Berciya.J
11.	Mary Portia.J
12.	Meenakshi.D
13.	Nilofar.A
14.	Ranjith.B.K
15.	Rithik Rishi.C.S
16.	Samhitha.S
17.	Santhosh.S
18.	Shyla Nancy. J
19.	Snekha.B
20.	Srinidhin.S
21.	Sumesh.S
22.	Sushma.T.A
23.	Sutharsanan.S
24.	Bavya Keerti M

25.	Vaishnavi S
26.	Rajkumar R
27.	Jaswanth Narayana R
28.	Anantha Reddi Yaswanth A
29.	Vishesh K
30.	Ajay Kumar S
31.	Balasubramani T
32.	Enos Jadlin G
33.	Hafsa Fathima.K
34.	Jerusha R
35.	Mahadevan N
36.	D Midhun Kumar
37.	Nithish R
38.	Niveditha P
39.	Priyadharshini.M
40.	Ranjini
41.	Ranjith.R
42.	Ridhan. R
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44.	Sowndharya S
45.	Sruthi S
46.	Viswa B
47.	Harsiddhi.A
48.	Tejasree K
49.	Jey Priya S
50.	Aswin Promod M
51.	Akash D
52.	Humaira Thusneem S
53.	Subhiksha N Iyer
54.	Karthika.R
55.	Murugulla Raghavendra
56.	Nethaji. A
57.	K.S.Ganesh
58.	Yuvaraj.B
59.	Barath.R
60.	Nivetha R
61.	Rohini
62.	Aswiny A.R
63.	Gadiyaram Radha Priya
64.	V. Mohan Rao

65.	Milind Joseph
66.	S.Saranya
67.	Aqueeno

Computational chemistry –

Workshop 03rd January – 10th

February 2022

Day	Date	Topics Covered	Faculty-In-Charge
1	3-01-2022	Chemistry databases - Introduction	Dr. Alex Anand
2	3-01-2022	Chemistry databases -Hand on	Dr. Alex Anand
3	4-01-2022	Chemistry databases –Hands on	Dr. Alex Anand
4	5-01-2022	Chemsketch – theory	Dr. Alex Anand
5	6-01-2022	Chemsketch - Hand on	Dr. Alex Anand
6	7-01-2022	Visualization – Molview	Dr. Swetha Sunkar
7	10-01-2022	Visualization - Rasmol	Dr. Swetha Sunkar
8	11-01-2022	Visualization -Pymol	Dr. Swetha Sunkar
9	12-01-2022	Visualization- Hands-on	Dr. Swetha Sunkar
10	13-01-2022	Visualization- Hands-on	Dr. Swetha Sunkar
11	14-01-2022	Open Babel – Hands on	Dr. Alex Anand
12	17-01-2022	Mcule –hands on	Dr. Alex Anand
13	18-01-2022	SWISSADME - theory	Dr. Swetha Sunkar
14	19-01-2022	SWISSADME – Hands on	Dr. Swetha Sunkar
15	20-01-2022	SWISSADME – Hands on	Dr. Swetha Sunkar
16	21-01-2022	Toxicity prediction - theory	Dr. Alex Anand
17	24-01-2022	Toxicity prediction – hands on	Dr. Alex Anand
18	25-01-2022	SWISSMODEL - theory	Dr. Alex Anand
19	26-01-2022	SWISSMODEL-Hands on	Dr. Alex Anand
20	27-01-2022	SWISSMODEL-Hands on	Dr. Alex Anand
21	28-01-2022	Model validation – theory	Dr. Alex Anand
22	31-01-2022	Model validation – Hands on	Dr. Alex Anand
23	1-01-2022	Energy minimization - theory	Dr. Jemmy Christy
24	2-01-2022	Energy minimization – Hands on	Dr. Jemmy Christy
25	3-01-2022	Discovery studio - Theory	Dr. Jemmy Christy
26	4-02-2018	Discovery studio – Hands on	Dr. Jemmy Christy
27	7-02-2018	Discovery studio – Hands on	Dr. Jemmy Christy
28	8-02-2018	Discovery studio - Hands on	Dr. Jemmy Christy
29	9-02-2018	Gromacs - theory	Dr. Jemmy Christy
30	10-02-2018	Gromacs – Hands on	Dr. Jemmy Christy

Computational Chemistry Report

Computational chemistry is divided into two parts:

- Computational investigations, which are used to determine a starting point for a laboratory synthesis or to help comprehend experimental data, such as the position and source of spectroscopic peaks.
- Computational studies, which are used to forecast the potential of previously unknown compounds or to investigate reaction mechanisms that are not easily examined through experiments.

Thus, computational chemistry can either assist or challenge experimental chemists to discover whole new chemical objects.

Within computational chemistry, many important fields can be distinguished:

- The prediction of a molecule's molecular structure using force simulation or more accurate quantum chemistry methods to discover stationary points on the energy surface as the position of the nucleus is altered.
- storing and searching for chemical entity data (see chemical databases).
- Recognizing relationships between chemical structures and properties (see quantitative structure-property relationship (QSPR) and quantitative structure-activity relationship (QSAR)).
- Computational techniques to aid in chemical synthesis efficiency.
- Computational approaches to designing compounds that interact with other molecules in certain ways (e.g. drug design and catalysis).

SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY

Department of Bioinformatics &

The Centre for Molecular Data Science and Systems Biology

Computational Chemistry - A workshop

CERTIFICATE OF PARTICIPATION

This is to certify That

ANGARA SREE THRIVENI SAMHITHA

has participated in the Hands on Training on "Computational Chemistry - A workshop" that was held from the 03rd January to 10th February, 2022 .

DR. V. RAMESH KUMAR

DR. JEMMY CHRISTY

DR. T. SASIPRABA



Convener

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5	Introduction to Mathematics for Computational Biology (Apr-May 2022)	Dr. Xavier Suresh

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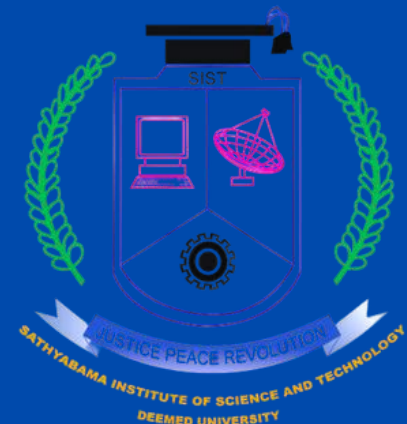
Dr. H. Jemmy Christy

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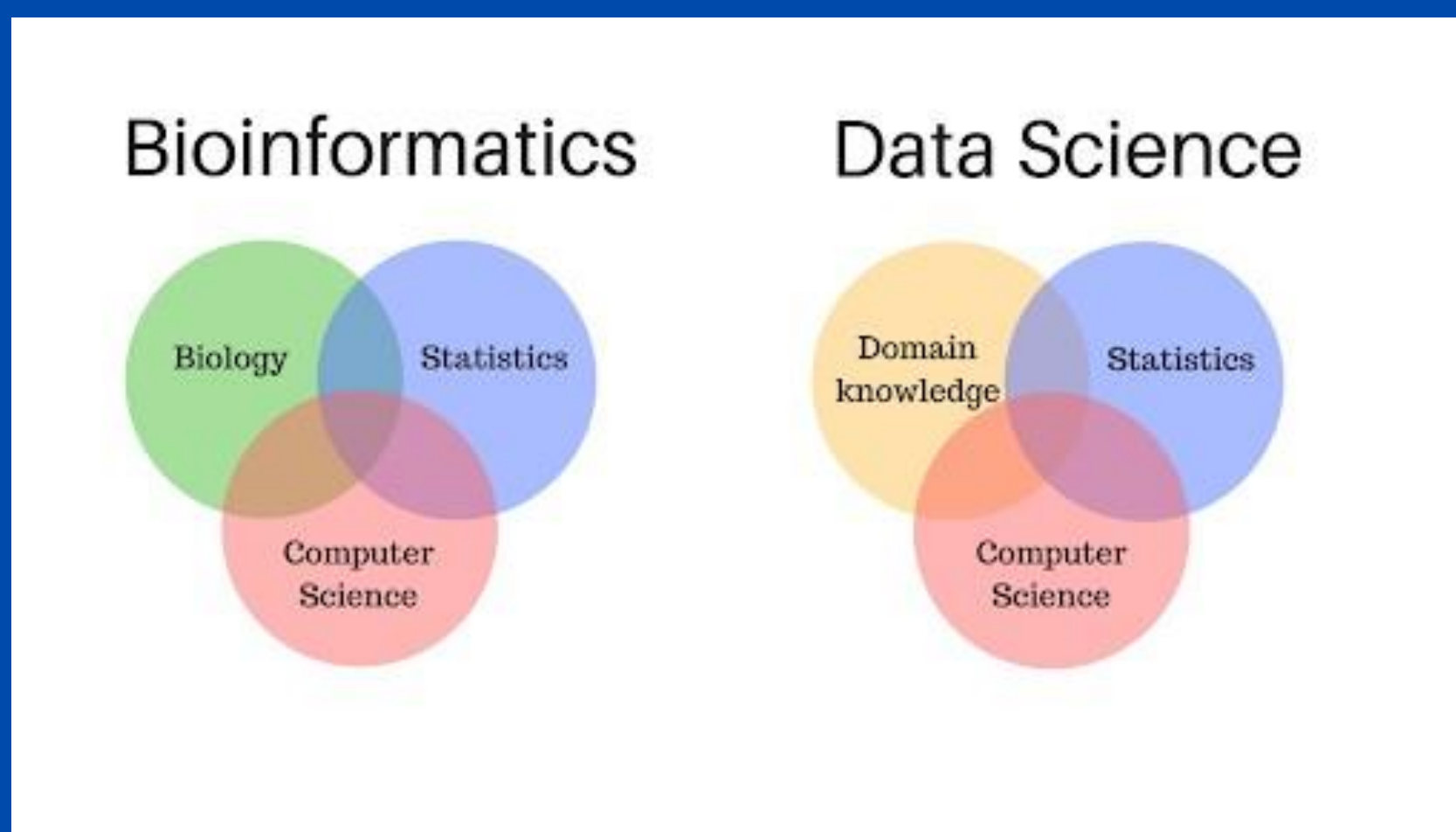
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Department of Bioinformatics &
The Centre for Molecular Data Science and Systems Biology

Presents

Data skills for Bioinformatics – A Hands on Workshop



March 01, 2022 - April 13, 2022

Faculty Co - ORDinator - DR.Swetha sunkar



COL. Dr. JEPPIAAR
Founder Chancellor



Dr. Mariazeena Johnson
Chancellor



Dr. Marie Johnson
President



Mr. J. Arul Selvan
Vice President



Ms. Maria Bernadette
Tamarasi Johnson
Vice President



Ms. Maria Catherine
Jayapriya
Vice President

PATRONS

DR. T. SASIPRABA, M.E., PH.D. VICE - CHANCELLOR, SIST

DR. S. S. RAO, M.B.A., PH.D. REGISTRAR, SIST | DR. E. LOGASHANMUGAM, M.E., PH.D., PRO VICE CHANCELLOR, SIST

Organizing Members - Dr. Jemmy Christy | Dr. D. Alex Anand, Department of Bioinformatics, SIST

Data Skills – 2022
Student Participants Namelist

Name	Email ID
Ajay Kumar S	ajay7483986487@gmail.com
Balasubramani T	balasubramanithirupathi@gmail.com
Enos Jadlin G	enosjadlin007@gmail.com
Hafsa Fathima.K	hafsafathima2004@gmail.com
Jerusha R	jerushareji@gmail.com
Mahadevan N	mahadevan9566@gmail.com
D Midhun Kumar	midhunkumardasari@gmail.com
Nithish R	nithishtamil524@gmail.com
Niveditha P	nivedithaperen@gmail.com
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Jey priya S	jeypriya17@gmail.com	

**Data skills for Bioinformatics-Mar-April 2022Complete
Schedule**

Couese co-ordinator-Dr.Swetha sunkar

DAY	DATE	TOPIC COVERED	FACULTY IN-CHARGE
Day 1	01-03-2022	Computational Biology Research - Gene Expression	Dr. H Jemmy Christy
Day 2	02-03-2022	Sequence analysis: Learn the use of BLAST	Dr.Swetha Sunkar
Day 3	03-03-2022	DNA Sequence Alignment Practice Exercise/Test	Dr.Swetha Sunkar
Day 4	04-03-2022	Whole-Transcriptome RNA-Seq Data Analysis using Linux	Dr Jeyanthi
Day 5	07-03-2022	Introduction to programming for Bioinformatics with Python	Dr. H Jemmy Christy
Day 6	08-03-2022	Genetics and Next Generation Sequencing for Bioinformatics	Dr.Swetha Sunkar
Day 7	09-03-2022	Learn Docking & Molecular Dynamics Simulation From Scratch	Dr Jeyanthi
Day 8	10-03-2022	Retrieving and downloading Bioinformatics Data.	Dr. H Jemmy Christy
Day 9	11-03-2022	Data Integrity. SHA and MD5 Checksums.	Dr Jeyanthi
Day 10	14-03-2022	Case Study: Reproducibly Downloading Data.	Dr.Swetha Sunkar
Day 11	15-03-2022	Datasets for genomics	Dr Jeyanthi
Day 12	16-03-2022	Next Generation Sequencing technologies.	Dr.Swetha Sunkar
Day 13	17-03-2022	Genome Analysis Toolkit (GATK)	Dr. H Jemmy Christy
Day 14	18-03-2022	How hierarchical clustering and decision trees would be useful in any bioinformatics role.	Dr.Swetha Sunkar
Day 15	21-03-2022	Understand the role of computation and data mining in hypothesis-driven processes within the life sciences	Dr.Swetha Sunkar
Day 16	22-03-2022	Know how to access gene expression data	Dr.Swetha Sunkar
Day 17	23-03-2022	Be able to use bioinformatics tools to analyze gene expression data	Dr Jeyanthi
Day 18	24-04-2022	Know how to access gene expression data with UniGene	Dr. H Jemmy Christy
Day 19	25-04-2022	Virtual Screening for Drug Discovery	Dr Daniel Alex Anand
Day 20	28-04-2022	Structural Bioinformatics Basics	Dr.Swetha Sunkar

Data skills for Bioinformatics-Mar-April 2022

Complete Schedule

Couese co-ordinator-Dr.Swetha sunkar

Day 21	29-04-2022	Manage your bioinformatics project with the Git version control system	Dr. H Jemmy Christy
Day 22	01-04-2022	Tackle tedious data processing tasks with Bash scripts and Makefiles	Dr.Swetha Sunkar
Day 23	04-04-2022	Develop R packages	
Day 24	05-04-2022	Designed the NGS based cancer diagnostics	Dr. H Jemmy Christy
Day 25	06-04-2022	Integrated DNA-seq and RNA-seq data for variant	Dr Daniel Alex Anand
Day 26	07-04-2022	Domain specific statistical tools and data visualization	Dr Daniel Alex Anand
Day 27	08-04-2022	Data wrangling: data processing, formatting and transformation	Dr.Swetha Sunkar
Day 28	11-04-2022	Data visualization and communication	Dr Daniel Alex Anand
Day 29	12-04-2022	Domain specific data processing and quality check	Dr Daniel Alex Anand
Day 30	13-04-2022	Storage and retrieval of data	Dr Daniel Alex Anand

Data Skills for Bioinformatics

Report

Learn the data skills necessary for turning large sequencing datasets into reproducible and robust biological findings. With this practical guide, you'll learn how to use freely available open-source tools to extract meaning from large complex biological datasets. At no other point in human history has our ability to understand life's complexities been so dependent on our skills to work with and analyze data. This intermediate-level book teaches the general computational and data skills you need to analyze biological data. If you have experience with a scripting language like Python, you're ready to get started

Go from handling small problems with messy scripts to tackling large problems with clever methods and tools. The topics covered will include - Computational Biology Research - Gene Expression - Sequence analysis: Learn the use of BLAST - Whole-Transcriptome RNA-Seq Data Analysis using Linux

- Genetics and Next Generation Sequencing for Bioinformatics - Retrieving and downloading Bioinformatics Data - Genome Analysis Toolkit (GATK) - Know how to access gene expression data with UniGene - Virtual Screening for Drug Discovery - Develop R packages



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

MARIYAM JOSE

has participated in the Hands on Training on Data skills for Bioinformatics
" that was held from the 01st March to 13th April, 2022 .

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

DR. V. RAMESH KUMAR
Convener

DR. JEMMY CHRISTY
HEAD, DEPARTMENT OF BIOINFORMATICS

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

DR. T. SASIPRABA
Vice Chancellor



SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY

Department of Bioinformatics &
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**Hands on Training on
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DR. V. RAMESH KUMAR
Convener

DR. JEMMY CHRISTY
HEAD, DEPARTMENT OF BIOINFORMATICS

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DR. T. SASIPRABA
Vice Chancellor



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: January 23, 2021

STUDENT CIRCULAR

Ref No: SIST / Bioinfo / Odd - sem / VAC / January 23, 2021 Dear

Students,

We are pleased 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 I year to the 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	Effective communication skills (Sep-Oct 15th 2021)	Dr. Jemmy Christy
2	NGS Data Analytics - Workshop (Nov-Dec 15th 2021)	Dr. Swetha Sunkar
3	Computational Chemistry - A workshop (Jan - Feb 2022)	Dr. D. Alex Anand.
4	Data skills for Bioinformatics (Mar-Apr 2022)	Dr. Ashok Kumar
5	Introduction to Mathematics for Computational Biology (Apr-May 2022)	Dr. Kirubashankar

Venue

Biocomputing Lab, Department of Bioinformatics.

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

HOD

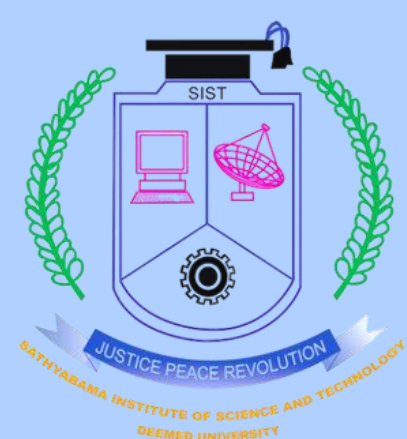
Dr. H. Jemmy Christy

Copy to

School of Bio and Engineering classrooms

Heads of School of Bio and Engineering classrooms

HEAD OF THE DEPARTMENT
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INSTITUTE OF SCIENCE AND TECHNOLOGY
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SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY

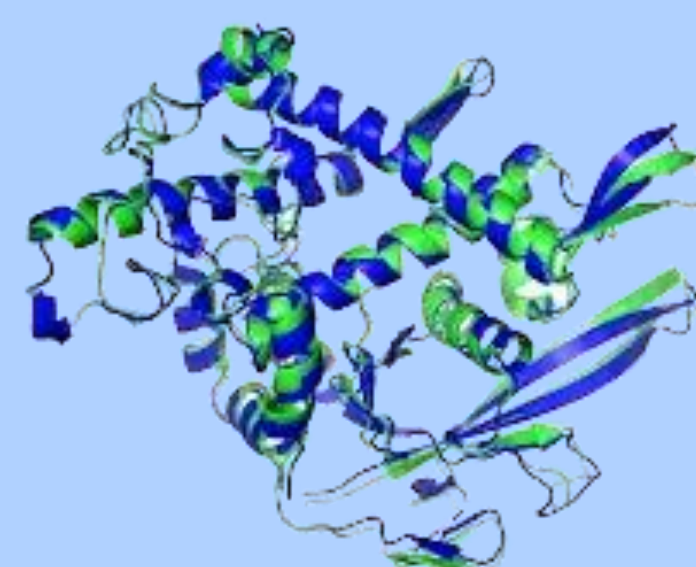
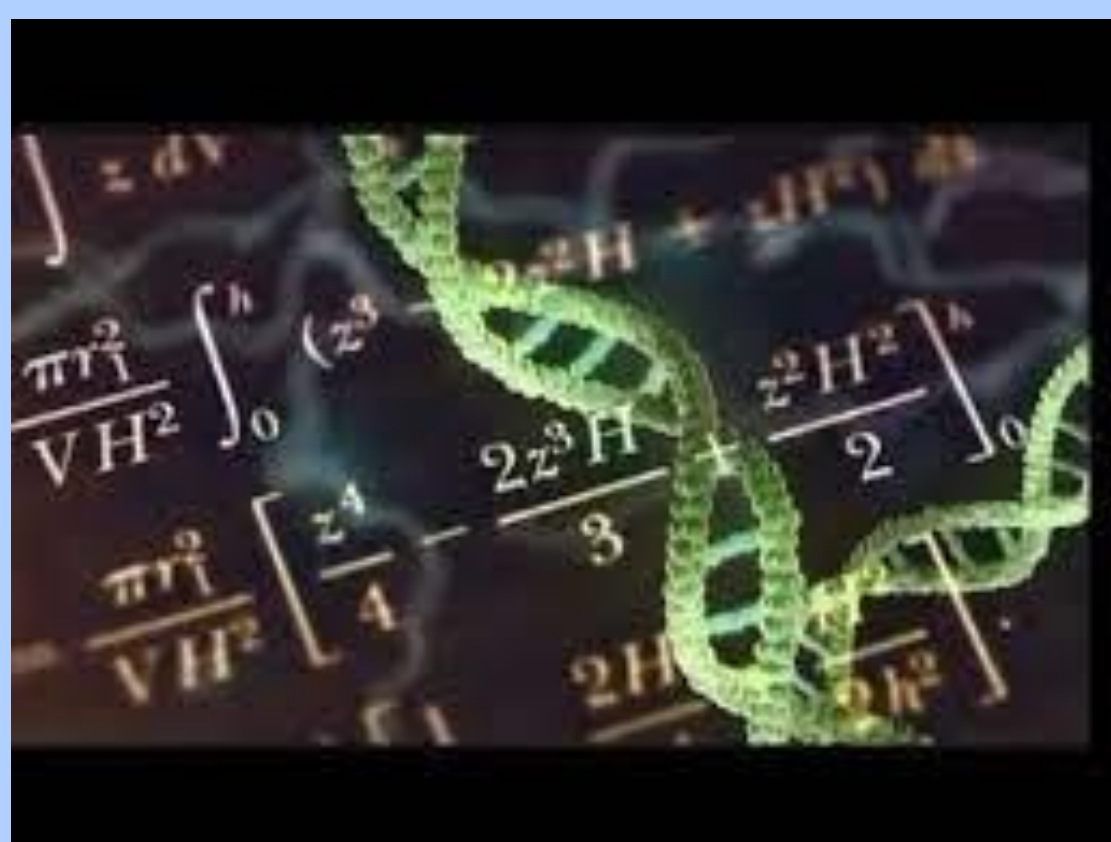
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Department of Bioinformatics &
The Centre for Molecular Data Science and Systems Biology

Presents

INTRODUCTION TO MATHEMATICS for COMPUTATIONAL Biology - 2022



April 27, 2022 - May 12, 2022

FACULTY CO - ORDINATOR - DR KIRUBASHANKAR



COL. Dr. JEPPIAAR
Founder Chancellor



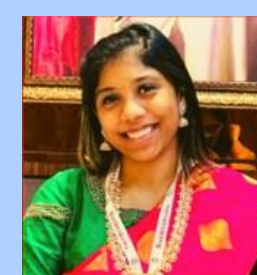
Dr. Mariazeena Johnson
Chancellor



Dr. Marie Johnson
President



Mr. J. Arul Selvan
Vice President



Ms. Maria Bernadette
Tamilarasi Johnson
Vice President



Ms. Maria Catherine
Jayapriya
Vice President

Organizing Members - Dr. Jemmy Christy | Dr. Swetha Sunkar | Dr. D. Alex Anand,
Department of Bioinformatics, SIST

Introduction to Mathematics for Computational Biology (Apr-May 2022)

Course coordinator - Dr. Jemmy
Christy

Name list of students registered

S. No	Register Number	Name of the student
1	40050016	Harini
2	40050014	Gokul Nathan
3	40050060	R.Yuvan Selvan
4	40050059	Yamuna. R
5	40230008	S.Dharshini
6	40050032	Nithya Sree B
7	39050026	S.Kokila
8	40770047	U.L. Shakthi Mythili
9	40770023	Kiran Sumesh
10	40738013	Nilofar
11	40770029	Meenakshi S
12	40738003	Aswini T
13	40738008	Kameshwaran T
14	39240031	Renita D
15	39050042	S.RUPPANA
16	40738022	SUSHMA T A
17	40050703	Solomon
18	40030043	S. Yogalakshmi
19	40050005	Anisha Bashir
20	40050054	Vasanth
21	40050051	B.Sugapriya
22	40050051	B.Sugapriya
23	40230032	NITISH KUMAR. S
24	40230034	Praveen.S
25	40230055	Rizwan Ahamed N
26	40738011	MARY PORTIA
27	40738004	S . Diksha
28	40050703	G.Kannan
29	40738017	Santhosh.S
30	40738023	Sutharsanan
31	40738021	Sumesh S
32	40738010	Lizi Berciya J
33	40738002	ARUN P
34	40738006	Hamsa Priyaa.M
35	40738012	D.Meenakshi
36	40738019	SNEKHA B
37	40230021	Kaviya Priya K
38	40230022	Mahalakshmi R
39	40738005	Guda Deepak Reddy

40	39050002	Abishek P
41	39050033	B. Nithya Dharani
42	39050012	Deepan Balaji M
43	40738018	Shyla Nancy. J
44	40738020	Srinidhin S
45	39050017	Indra. K
46	40738015	Rithik Rishi
47	39050018	G.Jayapriya
48	41739010	K.Milind
49	39050046	Sandhoshini. D
50	39050010	T Chithirai Selvi
51	39050035	Nivetha S
52	40050012	Dilli Babu
53	40050060	R.Yuvan Selvan
54	40050026	Kaviyarasan.K

Introduction to Mathematics for Computational Biology

Course Coordinator - Dr D Alex Anand (April – May 2022)
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
April 27, 2022	Early history and recent Growth
April 28, 2022	Abstract relational biology
April 29, 2022	Algebraic biology
April 30, 2022	Complex systems biology
April 27, 2022	Computer models and automata theory
May 02, 2022	Modeling cell and molecular biology
May 03, 2022	Modelling physiological systems
May 04, 2022	Computational neuroscience
May 05, 2022	Evolutionary biology
May 06, 2022	Mathematical biophysics
May 07, 2022	Mathematical methods
May 09, 2022	Model example: the cell cycle
May 10, 2022	Mathematical and theoretical Biology
May 11, 2022	Research groups and Thrust areas in India and abroad
May 12, 2022	Summary of the workshop, conclusion and certificate Distribution

Introduction to Mathematics for Computational Biology

Report

Objectives of the Course

Students should have knowledge of and an understanding of a variety of advanced mathematical techniques and how they apply to biological systems by the end of the course. They should also understand the basic ideas underlying some mathematical techniques that can be used to comprehend biological systems.

Quantitative approaches are widely considered to be helpful in addressing biological concerns at both the macro (population, community, ecosystem) and tiny (chemical and chromosomal) scales. It may be argued that these attempts have resulted in intriguing mathematical, statistical, and quantitative developments. However, the biological and mathematical communities have not fully benefited from one another at dimensions greater than DNA but smaller than populations.

This failure is particularly striking from a systems or integrative biology perspective. The main focus of systems biology is on how biological elements interact to produce adaptive behaviour at a higher level of integration. We use a broad definition of systems biology to include topics like the dynamics of intracellular genetic and protein networks during development, the incorporation of tissue responses to create dynamic homeostasis at the organism level, the emergence of higher cognitive function from neural networks, and the organisation of social systems by the movement and interaction of individual organisms. It is obvious that improvements in mathematical, statistical, computational, and engineering analysis can help with such challenges.

A number of scientific advances in fields like genomics, bioinformatics, and environmental biology that have largely embraced quantitative methodology have led to complementary motivations for improving the mathematical and computational aspects of systems biology. It therefore seems natural to look into what opportunities are similar in systems biology and what critical issues need to be resolved to achieve these opportunities. If systems biology does not adopt these analytical techniques, funding opportunities will be reduced due to the increased successful emphasis on mathematical and computational approaches in rival areas like medicine, genomics, and proteomics. If we don't take advantage of developments in the computational and mathematical sciences, we can also miss a chance to gain a greater knowledge of integrated living systems.



SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY

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

**Lecture / Hands ON Workshop on
Introduction to Mathematics for Computational Biology**

CERTIFICATE OF PARTICIPATION

This is to certify That

R.YUVANSELVAN

has participated in the Hands on Training on Introduction to Mathematics for computational biology that was held from the 27th April to 12th May, 2022 .

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DR. V. RAMESH KUMAR
Convener

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DR. JEMMY CHRISTY
HEAD, DEPARTMENT OF BIOINFORMATICS

A handwritten signature in green ink, appearing to read 'T. Sasipraba'.

DR. T. SASIPRABA
Vice Chancellor