



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

1.3.2 VALUE ADDED COURSES FOR IMPARTING TRANSFERABLE AND LIFE SKILLS OFFERED DURING 2023 – 2024

S. No	TITLE	DATE OF THE EVENT	NO. OF STUDENTS ENROLLED	NO. OF STUDENTS COMPLETED	PAGE NO
1	NGS Data Analytics	11.07.2023 TO 28.07.2023	23	23	2
2	Computational Chemistry	04.09.2023 TO 30.09.2023	44	44	7
3	Python for Biologists	27.01.2024 TO 13.04.2024	150	150	12



SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY

(Deemed to be University)
www.sathyabama.ac.in

Accredited with Grade 'A++' by NAAC | 12B Status & Category - I by UGC | Approved by AICTE

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

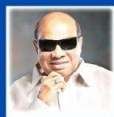
Presents

NGS DATA ANALYTICS WORKSHOP - 2023



July 11 - July 28th 2023

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
Tamilarasi 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. Swetha Sunkar | Dr. D. Alex Anand,
Department of Bioinformatics, SIST

Facilitated by - The Students & Faculty, Department of Bioinformatics

List of Participants

S.NO	REGISTER NO	NAME
1.	43738003	DHANUSH KUMAR B
2.	43738048	K.Jeni
3.	43738019	Nafesa Naslin Y
4.	43739034	R.Yuvarekha
5.	43739029	Nikitha.v
6.	42738011	Celin Francia
7.	42738015	S HARSHITHA
8.	42738039	Thirsha BR
9.	42738028	Rakshithashree S
10.	43240066	Shreya anish
11.	42738031	SHARMIKA V
12.	43738023	S Abdul Sahir
13.	43738032	Fathimathu nazlee
14.	42738021	K. Sai Naga Tejaswi
15.	43739014	Balakannan
16.	43738044	M.Sripriya
17.	43240042	Thevadharsheni. L
18.	43738003	DHANUSH KUMAR B
19.	43738029	Ria Rajeev
20.	43739032	K.s yuva Chandrika
21.	43240017	M.keerthana
22.	42738016	Jessica J
23.	42738035	Subhashini M
24	42738044	Yuvashri G

Days	Date	Topics Covered	Faculty-In-Charge
1-2	11-7-2023 to 12-7-2023	Introduction to Unix/Linux & running workflows	Dr. Alex Anand
3-4	13-7-2023 to 14-7-2023	Introduction to NGS Technologies	Dr. Swetha Sunkar
5-6	17-7-2023 to 18-7-2023	NGS data pre-processing and QC	Dr. Jemmy Christy
7-8	19-7-2023 to 21-7-2023	Alignment to reference sequences	Dr. Jemmy Christy
9-10	24-7-2023 to 26-7-2023	Variant calling and annotation	Dr. Alex Anand
11-12	27-7-2023	ChIPSeq	Dr. Swetha Sunkar
13-14	27-7-2023	RNASeq	Dr. Jemmy Christy
15-16	28-7-2023	Genome assembly	Dr. Alex Anand

Next Generation Sequencing Workshop – Objective and outcomes

- 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 bioinformatics after this three-day training, but you will be well on your way to being a qualified partner for bio informaticists 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 - 2023

CERTIFICATE OF PARTICIPATION

THIS IS TO CERTIFY THAT

K. SAI NAGA TEJASWI

has participated in the Hands on Training workshop on "Next Generation Sequencing" that was held from the July 11 to July 28, 2023

DR. V. RAMESH KUMAR
CONVENER

DR. JEMMY CHRISTY
HEAD, DEPARTMENT OF BIOINFORMATICS

DR. T. SASIPRABA
VICE CHANCELLOR



SATHYABAMA

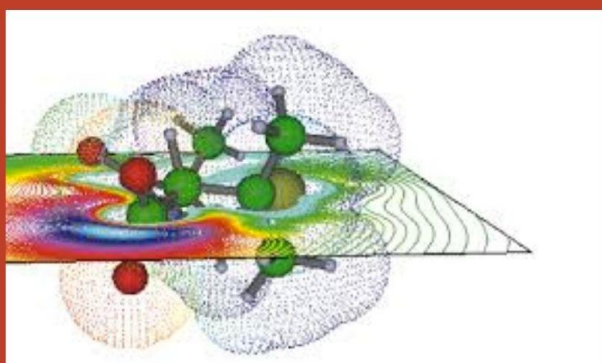
INSTITUTE OF SCIENCE AND TECHNOLOGY
(Deemed to be University)
www.sathyabama.ac.in



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

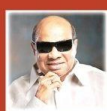
Presents

COMPUTATIONAL CHEMISTRY - A WORKSHOP



September 04 – September 30, 2023

FACULTY CO - ORDINATOR - DR. JEMMY CHRISTY



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. Swetha Sunkar | Dr. D. Alex Anand,
Department of Bioinformatics, SIST

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

Computational chemistry – Workshop
Student Namelist Sep 4 – Sep 30, 2023

S. No	REGISTER NO	NAME
1.	43240056	Laavanya R R
2.	42738033	Sruthi
3.	43240048	Sangeetha Priya M
4.	42738001	Aaditya Vibushan
5.	43240055	S.Keerthana
6.	43240004	Arunalakshmi Paranthaman
7.	43240064	S. Meghashree
8.	43240066	Shreya anish
9.	43240036	Swetha sureshkumar
10.	43738008	Jothi Lakshmi .T
11.	43738031	Sarojini P
12.	42738031	SHARMIKA V
13.	43738023	S Abdul Sahir
14.	43738014	B.M.Sreya Mahalakshmi
15.	43738032	Fathimathu nazlee
16.	43738035	Fahima afa b
17.	42738021	K. Sai Naga Tejaswi
18.	43738039	Poovizhi.S
19.	43738038	Sathya priya. S
20.	43738034	Ramya keerthi yennamsetti
21.	43738034	Shayanthini
22.	43738012	Shayanthini R
23.	43738015	V Srinidhi

24	43739017	Aswanth.S
25	43739014	Balakannan
26	43738020	Swethasri S
27	43739036	SOWMIYADEVI S
28	43738040	A.Selvakani
29	43738001	A.Sai Adira
30	43738007	Harini.S
31	43738006	Harini.S
32	43738010	Reuben Richard
33	43738002	Ananya Ramgopal
34	43738044	M.Sripriya
35	43240009	D.Divya dharshini
36	43240042	Thevadarsheni. L
37	43738011	Rohini
38	43738011	Rohini
39	43738018	Jayasurya P
40	43738009	K Pavya
41	43738036	M. Baranika
42	43738026	K.Janani
43	43738042	Mythili.S
44	43738033	B .madhura meenakshi

Computational chemistry – Workshop
Sep 04 – Sep 30, 2023

Day	Date	Topics Covered	Faculty-In-Charge
1	04/09/2023	Chemistry databases - Introduction	Dr. Alex Anand
2	05/09/23	Chemistry databases -Hand on	Dr. Alex Anand
3	06/09/23	Chemistry databases –Hands on	Dr. Alex Anand
4	7/09/23	Chems sketch – theory and Hands on	Dr. Alex Anand
5	8/09/23	Chems sketch - Hand on	Dr. Alex Anand
6	11/09/23	Molview and Rasmol	Dr. Swetha Sunkar
7	12/09/23	Pymol	Dr. Swetha Sunkar
8	13/09/23	Open Babel – Hands on	Dr. Swetha Sunkar
9	14/09/23	Mcule –hands on	Dr. Swetha Sunkar
10	15/09/23	SWISSADME	Dr. Swetha Sunkar
11	18/09/23	Toxicity prediction - theory	Dr. Alex Anand
12	19/09/23	Toxicity prediction – hands on	Dr. Alex Anand
13	20/09/23	SWISSMODEL	Dr. Swetha Sunkar
14	21/09/23	Model Validation	Dr. Swetha Sunkar
15	22/09/23	Energy Minimization	Dr. Swetha Sunkar
16	25/09/23	Discovery studio - 1	Dr. Alex Anand
17	26/09/23	Discovery studio - 2	Dr. Alex Anand
18	27/09/23	Gromacs – 1	Dr. Alex Anand
19	28/09/23	Gromacs – 2	Dr. Alex Anand
20	29/09/23	Gromacs – 3	Dr. Alex Anand
21	30/09/23	Gromacs – 4	Dr. Alex Anand

Computational Chemistry – Objective and outcomes

The phrase theoretical chemistry can be described as a mathematical representation of chemistry, whereas computational chemistry is typically used when a mathematical approach has been sufficiently developed to be automated for computer execution. Chemists, physicists, and mathematicians work together to create algorithms and computer systems that anticipate atomic and molecular characteristics and reaction routes for chemical reactions. In contrast, computational chemists may simply apply existing computer tools and approaches to specific chemical problems.

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

B .MADHURA MEENAKSHI

has participated in the Hands on Training workshop on "Computational Chemistry - A workshop" that was held from the September 04 - September 30, 2023

DR. JEMMY CHRISTY

HEAD, DEPARTMENT OF BIOINFORMATICS

DR. T. SASIPRABA

VICE CHANCELLOR



SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY

(Deemed to be University)

Accredited with Grade 'A++' by NAAC | 12B Status & Category - I by UGC | Approved by AICTE

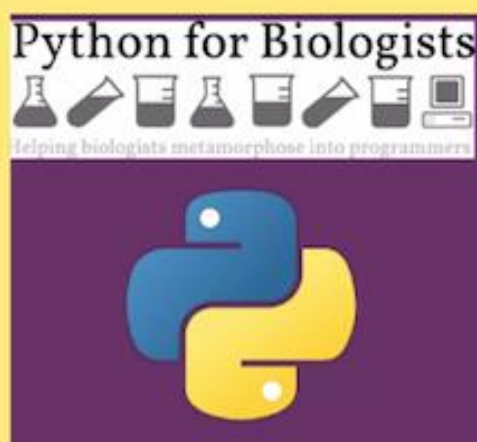
www.sathyabama.ac.in

Department of Bioinformatics

Presents

PYTHON FOR BIOLOGISTS - 2024

(A 12 WEEK INTENSIVE TRAINING PROGRAM WITH CERTIFICATION)



January 27, 2024 – April 13, 2024

FACULTY CO – ORDINATORS - DR. D. ALEX ANAND & MS. MANISHA

PATRONS

DR. MARIAZEENA JOHNSON, CHANCELLOR

DR. MARIE JOHNSON, PRESIDENT

MR. J. ARUL SELVAN, VICE PRESIDENT

MS. MARIA BERNADETTE, VICE PRESIDENT

MS. MARIA CATHERINE JAYAPRIYA, VICE PRESIDENT

DR. T. SASIPRABA, VICE CHANCELLOR

Conveners

Dr. Rekha Chakravarthi, Dean

Dr. Jemmy Christy, Head of the Department

Organizing Members

Dr. Swetha Sunkar,
Associate Professor, Department of Bioinformatics

Dr. R. Mahalakshmi
Assistant Professor, Department of Bioinformatics

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

Python for Biologists
Course coordinators - Dr. D. Alex
Anand & Ms. Manisha Koyimadatha

Name list of students registered

1	43738003	DHANUSH KUMAR B
2	43739019	Lokesh.c
3	43738048	K.Jeni
4	43738019	Nafesa Naslin Y
5	42738030	Shahin ahmed shameem
6	43739028	Velmurugan G
7	43739013	Akulwad Shalini
8	43739009	Shaik Yasmin Tabasum
9	43739021	Ancy Preshifa
10	43240072	Pandravada Samarth Mihir
11	43739034	R.Yuvarekha
12	43739029	Nikitha.v
13	43739012	Yuganraj.S
14	43749006	Jennifer j
15	43739035	Amruthq M
16	43739036	SOWMIYA DEVI S
17	43739039	Abitha
18	43739027	Sneha sunil
19	43739026	Atchaya R
20	43739025	Suriyapriya V
21	43739037	S D BOOMISHA
22	43739038	Vivekaa A
23	43739041	M.P.Keerthana
24	43739007	Kowsalya .J
25	43739004	Durgadevi.J
26	43739042	Brindha Ramachandran
27	43240026	R.S.Roshni
28	43240069	M kavyaalagi
29	42738034	Subashree
30	42738011	Celin Francia
31	42738015	S HARSHITHA
32	42738039	Thirsha BR
33	42738028	Rakshithashree S
34	43240056	Laavanya R R
35	42738033	Sruthi
36	43240048	Sangeetha Priya M
37	42738001	Aaditya Vibushan
38	43240055	S.Keerthana
39	43240004	Arunalakshmi Paranthaman
40	43240064	S. Meghashree
41	43240066	Shreya anish
42	43240036	Swetha sureshkumar
43	43738008	Jothi Lakshmi .T
44	43738031	Sarojini P
45	42738031	SHARMIKA V
46	43738023	S Abdul Sahir
47	43738014	B.M.Sreya Mahalakshmi
48	43738032	Fathimathu nazlee

49	43738035	Fahima afsa b
50	42738021	K. Sai Naga Tejaswi
51	43738039	Poovizhi.S
52	43738038	Sathya priya. S
53	43738034	Ramya keerthi yennamsetti
54	43738034	Shayanthini
55	43738012	Shayanthini R
56	43738015	V Srinidhi
57	43739017	Aswanth.S
58	43739014	Balakannan
59	43738020	Swethasri S
60	43739036	SOWMIYADEVI S
61	43738040	A.Selvakani
62	43738001	A.Sai Adira
63	43738007	Harini.S
64	43738006	Harini.S
65	43738010	Reuben Richard
66	43738002	Ananya Ramgopal
67	43738044	M.Sripriya
68	43240009	D.Divya dharshini
69	43240042	Thevadharsheni. L
70	43738011	Rohini
71	43738011	Rohini
72	43738018	Jayasurya P
73	43738009	K Pavya
74	43738036	M. Baranika
75	43738026	K.Janani
76	43738042	Mythili.S
77	43738033	B .madhura meenakshi
78	43738041	Dharshini.R
79	43738016	Sundhara Aswanth Kanth P
80	43738003	DHANUSH KUMAR B
81	43240051	S.Renuga parameswari
82	43240067	Jayalakshmi
83	43240058	Mano Akash.P
84	43738030	Aakash Karna
85	43240045	Gogulraj Thangaraju
86	43738029	Ria Rajeev
87	43738024	R.Sanjeetha banu
88	43738021	Aishwarya J
89	43739032	K.s yuva Chandrika
90	43739033	K. S. Thilagavathi
91	43240017	M.keerthana
92	43739005	Jayasree.K
93	43739016	Gomathi
94	43240043	Bhavanaa A
95	43738047	Rohan. S
96	43738025	Ragumanikandan . R
97	43738017	Hariharasudhan
98	43738046	John Jesus .A.M
99	43240068	Prissha J
100	43240063	M.Eswari
101	43738027	Rahul.U
102	43738022	Aznain Mohammed Sadiri

103	43240046	Janani.p
104	43240028	Gayathri. S
105	42738016	Jessica J
106	43738005	Emmanuel
107	42738035	Subhashini M
108	43738037	Selvi S
109	43739031	Abirami.G
110	42738040	Varada akshaya lakshmi karthika
111	42738005	Akilesh JV
112	43739020	M.Sangeerthana
113	42738044	Yuvashri G
114	42738027	Prathiksha P
115	43739008	Rakshana R
116	43739001	Akash anjalo
117	42738007	Anitha S
118	42738038	TARUNIKA K
119	42738043	Vishva.G
120	42738042	M.Vedha sree
121	42738041	Varun S
122	42738008	ARUN BEDO A
123	42738013	Garlapati vegna sahithi
124	42738023	M.MUTHU SIVA SUBRAMANIAN
125	42738013	Garlapati vegnasahithi
126	42738010	Boomika V
127	42738024	V. Nandha Kumar
128	42738006	R Ancy Angel Arachi
129	42738036	Sumithra R
130	42738032	Sri ranjani A
131	42738029	Ramamoorthy M
132	42738003	Cheerson
133	42738045	G.Kalaivani
134	43739040	Praveen raja. K
135	42738012	Deva dharshini
136	43738043	Papisha
137	42738002	Aarthi.s
138	42738018	Kanaga durga d
139	42738022	Nk Monisha
140	43240062	Sri sajan B
141	43739023	Anusha.R
142	43739033	Yuvashree M
143	43739011	Nikhitha Sebastian T
144	42738025	S Paul Elavarasan
145	43739015	Gowsalya.S
146	43739010	P.S.Sivasankari
147	43739015	Gowsalya.S
148	43739018	Naaz Parvin
149	40240015	Kamalesh
150	40230009	Durga Gomathi A

Python for Biologists

Course Schedule

Week	Topic	Resource Person
Week - 1	Introduction and environment	Dr. D. Alex Anand
Week - 2	Printing and manipulating text	Ms. Manisha Koyimadatha
Week - 3	Reading and writing files	Dr. D. Alex Anand
Week - 4	Lists and loops	Ms. Manisha Koyimadatha
Week - 5	Writing our own functions	Dr. D. Alex Anand
Week - 6	Conditional tests	Ms. Manisha Koyimadatha
Week - 7	Regular expressions	Dr. D. Alex Anand
Week - 8	Dictionaries	Ms. Manisha Koyimadatha
Week - 9	Files, programs, and user input	Dr. D. Alex Anand
Week - 10	Practice progrms - I	Ms. Manisha Koyimadatha
Week -11	Practice progrms - II	Dr. D. Alex Anand
Week - 12	Final Evaluation	Ms. Manisha Koyimadatha

Python for Biologists

Hands on Workshop on Python for Computational Biology - Objective and outcomes

1. Objective:

The objective of the "Hands-on Workshop on Python for Computational Biology" is to provide participants with a comprehensive understanding of how Python can be utilized for solving computational biology problems. The workshop aims to equip attendees with the fundamental skills in Python programming, data analysis, and visualization, as well as introduce them to specialized libraries and tools commonly used in bioinformatics and computational biology. By the end of the workshop, participants will be able to apply Python to analyze biological datasets, perform sequence analysis, and model biological systems.

2. Outcomes:

1. **Understanding of Python Basics:** Participants will gain proficiency in Python syntax, data structures, and control flow, forming a solid foundation for further applications in computational biology.
2. **Data Manipulation and Analysis:** Attendees will learn how to manipulate and analyze biological data using Python libraries such as NumPy, Pandas, and Biopython, enabling them to handle large datasets effectively.
3. **Sequence Analysis:** Participants will acquire skills to perform sequence analysis, including sequence alignment, motif finding, and working with FASTA files using Biopython.
4. **Data Visualization:** The workshop will teach participants how to visualize biological data using libraries like Matplotlib and Seaborn, aiding in the interpretation and presentation of complex datasets.
5. **Modeling Biological Systems:** Attendees will be introduced to basic concepts of modeling biological systems using Python, including creating and analyzing models of gene regulation and metabolic pathways.
6. **Hands-on Project Experience:** By the end of the workshop, participants will have completed hands-on projects that apply Python to real-world biological problems, reinforcing their learning and providing practical experience.
7. **Enhanced Problem-Solving Skills:** Participants will develop problem-solving skills specific to computational biology, learning how to approach and solve complex biological questions using computational methods.
8. **Preparation for Advanced Studies:** The workshop will prepare attendees for more advanced topics in computational biology and bioinformatics, serving as a stepping stone for future learning and research in the field.



SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY

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

Python for Biologists - Hands workshop

CERTIFICATE OF PARTICIPATION

THIS IS TO CERTIFY THAT

YUVASHREE M

has participated in the Hands on Training workshop on "Python for Biologists " that was held from the January 27 - April 13, 2024

DR. JEMMY CHRISTY

HEAD, DEPARTMENT OF BIOINFORMATICS

DR. T. SASIPRABA

VICE CHANCELLOR