DEPARTMENT OF BIOTECHNOLOGY & BIOINFORMATICS
JSS ACADEMY OF HIGHER EDUCATION & RESEARCH MYSURU-570015
(Deemed to be University)
Accredited "A+" Grade by NAAC

VALUE ADDED PROGRAM ON BIOINFORMATICS TOOLS & DATABASES

The Department of Biotechnology & Bioinformatics successfully organised a value-added course on Bioinformatics Tools and Databases from 13th August 2024 to 17th August 2024. The course aimed to provide participants with a comprehensive understanding of utilising bioinformatics tools and databases for research and analysis. The course was conducted by Course Coordinator Dr. Ramith Ramu and received active participation from a total of 42 students belonging to the Department of Biotechnology & Bioinformatics. The sessions were designed to cover a wide range of topics related to bioinformatics, equipping the participants with practical skills and theoretical knowledge.

PROGRAMME SCHEDULE

Date	Day	Modules	Time	Resource person
13/08/2024	Tuesday	Module -1 Module-1.1	10:00am - 11:30pm 11:45am – 1:30pm	Dr. Mohan TC Dr. Ramith Ramu
		Module -2	2:00pm - 6:00pm	Dr. Shashanka Prasad
14/08/2024	Wednesday	Module -3	9:00am - 1:30pm	Dr. Ramith Ramu
		Module -4	2:00pm - 6:00pm	Dr. Saravanan.P
16/08/2024	Friday	Module -5	9:00am - 1:30pm	Dr. Kiran Kumar
		Module -6	2:00pm - 6:00pm	Dr. Ramith Ramu
17/08/2024	Saturday	Module -7	9:00am - 1:30pm	Dr. Saravanan.P

Inauguration

The inauguration of the Value Added Course on Bioinformatics Tools & Databases marked a significant milestone in the academic calendar of the Department of Biotechnology & Bioinformatics. The event was graced by esteemed personalities including Dr. K.A Raveesha, Professor & Head of the Department; Dr. Gopenath TS, Coordinator; Dr. Ramith Ramu, Course Coordinator; and Dr. Kiran Kumar MN, along with other distinguished faculties of the department and enthusiastic students. The event commenced with an inspiring address by Dr. K.A Raveesha, who emphasised the importance of bioinformatics in modern-day research and its potential to revolutionise our understanding of biological systems. Gopenath TS, the Coordinator further elaborated on the objectives and structure of the value-added course, highlighting its role in equipping students with practical skills and knowledge in the field. Dr. Ramith Ramu, the Course Coordinator of Value added programme, shared insights into the course curriculum, outlining the various modules and topics that participants would engage with during the program. His enthusiastic presentation set the tone for an engaging and informative course. Dr. Kiran Kumar MN, along with other faculties of the department, extended their best wishes to the participants and encouraged them to make the most of the learning opportunity presented by the course.

Clockwise: The Head, Department coordinator & Course coordinator of the Department of Biotechnology & Bioinformatics addressing the students during the Inauguration session

***Module 1 - Morning Session*:** The morning session of the value-added course by Dr. Ramith Ramu and Dr. Mohan TC delved into the fundamental concepts of life molecules - DNA and proteins. Participants were introduced to the intricate world of DNA, the molecule of life, and proteins, the molecular machines driving cellular processes. The theoretical segment provided a solid foundation, elucidating the roles and significance of these molecules in biological systems.

Following the informative lectures, participants engaged in practical sessions centred around protein visualisation software. This hands-on experience allowed attendees to explore the three-dimensional structures of proteins, gaining insights into their complex architectures and functional aspects. The combination of theoretical knowledge and practical application enriched participants' understanding of DNA and proteins.

An interactive session on Introduction to DNA by Dr. Mohan TC & introduction to Protein by Dr. Ramith Ramu

Module 2 - Afternoon Session: The afternoon session of the course by Dr.Shashanka Prasad focused on imparting knowledge about biological databases and software tools. Participants were introduced to the diverse array of resources available in the field of bioinformatics. The session covered an introduction to various biological databases that house valuable genomic, proteomic, and structural data. Additionally, participants gained insights into software tools that facilitate data analysis, sequence alignment, and structural prediction. Through interactive discussions and practical demonstrations, attendees familiarised themselves with navigating and utilising these databases and software tools effectively. The session aimed to equip participants with the skills necessary to access, retrieve, and interpret biological data for research purposes.

Introduction to Bioinformatics by Dr. Shashanka K Prasad

Module 3 - Morning Session: Day 2 of the Value Added Course on Bioinformatics Tools & Databases commenced by Dr. Ramith Ramu with an in-depth exploration of basic concepts related to genes and genome sequencing. The participants were provided a comprehensive understanding of genes, their roles in biological systems, and the significance of genome sequencing in unravelling complex biological information. The session further delved into the intricate processes of genome assembly and annotation, shedding light on the methodologies and tools used to piece together sequenced DNA fragments into a coherent genome and subsequently annotate its functional elements. A practical session on genome analysis tools followed, allowing participants to apply the concepts they had learned. Through hands-on activities, attendees gained firsthand experience in utilising bioinformatics tools to analyse genomic data, contributing to a deeper comprehension of the subject matter.

Session on Genome analysis and annotation by Dr. Ramith Ramu

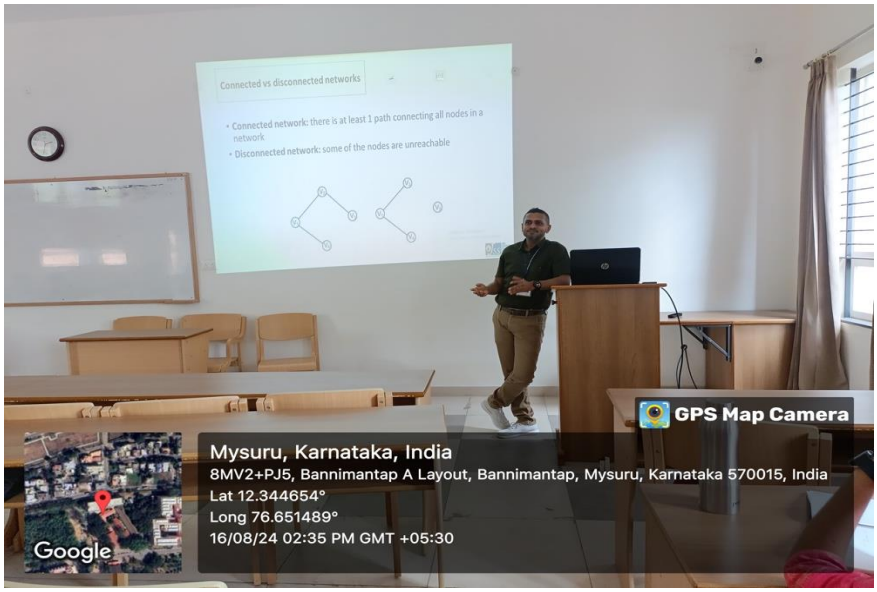
Module 4 - Afternoon Session: In the afternoon session, Dr. Saravanan P. introduced participants to the core concepts of Computer-Aided Drug Design (CADD) and Structural Bioinformatics. He emphasized the critical role computational methods play in deciphering molecular interactions, advancing drug discovery, and analyzing the structural properties of biomolecules. This intersection of disciplines highlights the importance of computational tools in modern biomedical research.

Dr. Saravanan P. presenting key computational techniques in drug discovery and structural bioinformatics

Module 5 - Morning Session: Day 3 of the Value Added Course on Bioinformatics Tools & Databases featured a comprehensive overview of Immunology and Immunoinformatics by Dr.Kiran Kumar. Participants were immersed in the world of the immune system, gaining insights into its mechanisms, functions, and the role it plays in maintaining health.
This engaging morning session not only deepened participants' understanding of immunology but also equipped them with valuable skills for harnessing bioinformatics resources in immunological research.

Dr. Kiran Kumar explores Immunology and Immunoinformatics, connecting immune system insights with bioinformatics applications

Module 6 - Afternoon Session: In the afternoon session, Dr. Ramith Ramu introduced participants to the dynamic fields of network analysis and systems biology. The session highlighted how complex biological systems can be analyzed by viewing them as interconnected networks. Participants explored the core principles of systems biology, learning how interactions between genes, proteins, and other molecular components lead to emergent properties within biological systems. The session also offered hands-on experience with systems biology tools, enabling attendees to delve into the complexities of biological networks.



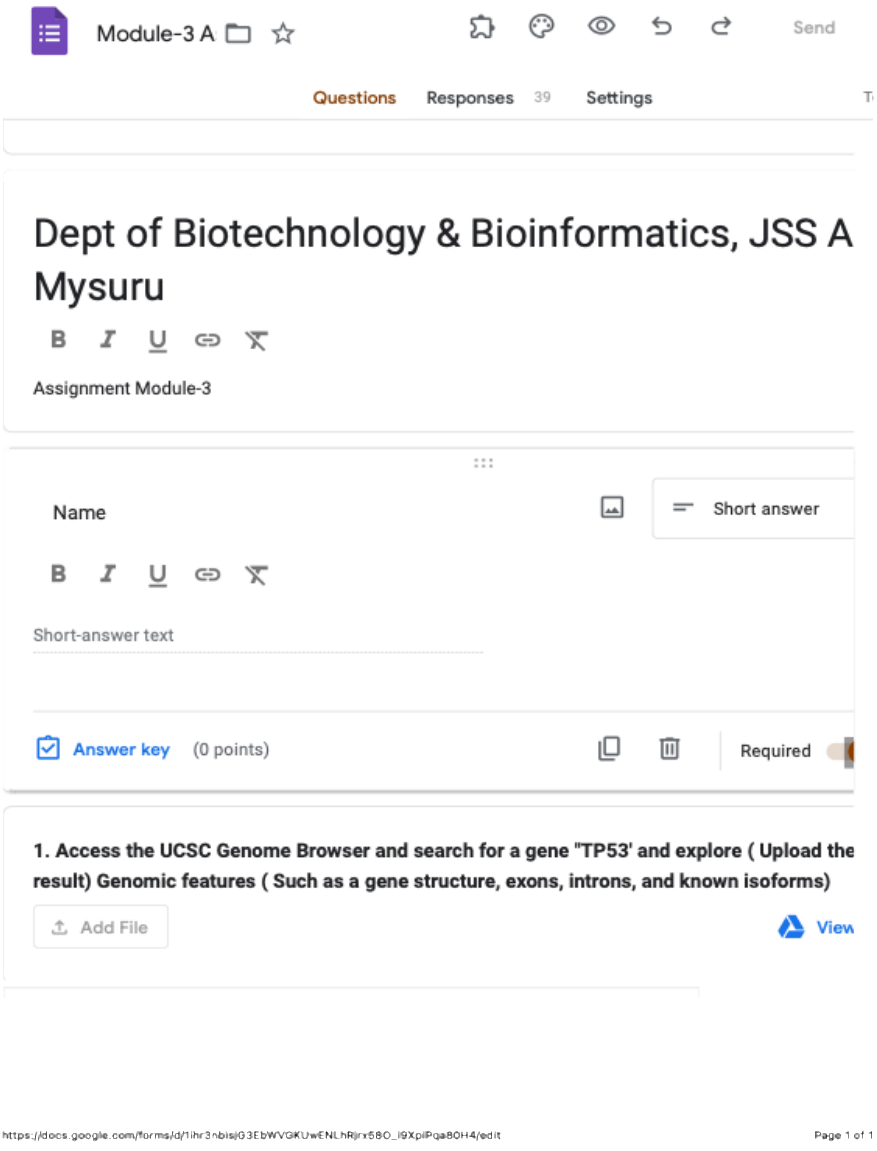
Dr. Ramith Ramu guiding participants through network analysis and systems biology, showcasing the study of complex biological networks and interactions

Module7- Morning Session: Day 4 of the Value Added Course on Bioinformatics Tools & Databases began with a focus on imparting essential technical skills to the participants by Dr.Saravanan.P . The morning session was dedicated to equipping attendees with foundational knowledge in Python programming, GitHub, and Google Colab. Participants engaged in hands-on training, learning the basics of Python programming—a versatile language widely used in data analysis and scientific research. They were introduced to essential programming concepts and syntax, setting the stage for future computational work in bioinformatics. Furthermore, the session covered the utilisation of GitHub—an indispensable platform for version control and collaborative coding. Participants learned how to create repositories, manage code changes, and collaborate effectively on coding projects. Lastly, participants were introduced to Google Colab—a cloud-based platform that allows for seamless coding and collaboration. The session showcased how Colab can be utilised to execute code, analyse data, and share work within a collaborative environment.

A session on Python programming by Dr. Saravanan. P

Group photo of participants

Assignment from participants on the course :



MCQ conducted:

Dept of Biotechnology & Bioinformatics, JSSAHER Mysuru

Value-added course on Bioinformatics Tools & Databases : Module-2

* Indicates required question

1. 1. Which of the following databases is primarily used for storing and retrieving 3D structures of proteins and nucleic acids? 1 p

Mark only one oval.

- A) GenBank
- B) UniProt
- C) PDB
- D) PubChem

2. 2.In sequence alignment, which method is commonly used to align two sequences by comparing them directly and scoring matches and mismatches? * 1 p

Mark only one oval.

- A) Multiple sequence alignment
- B) Pairwise sequence alignment
- C) Phylogenetic analysis
- D) Database searching

Feedback form:

Dept of Biotechnology & Bioinformatics , JSSAHER

Value-added course on Bioinformatics Tools & Databases Feeback form: Module 5

Thank you for participating We hope you had as much fun attending as we did organizing it.

* Indicates required question

1. Email *

2. How satisfied were you with the event? *

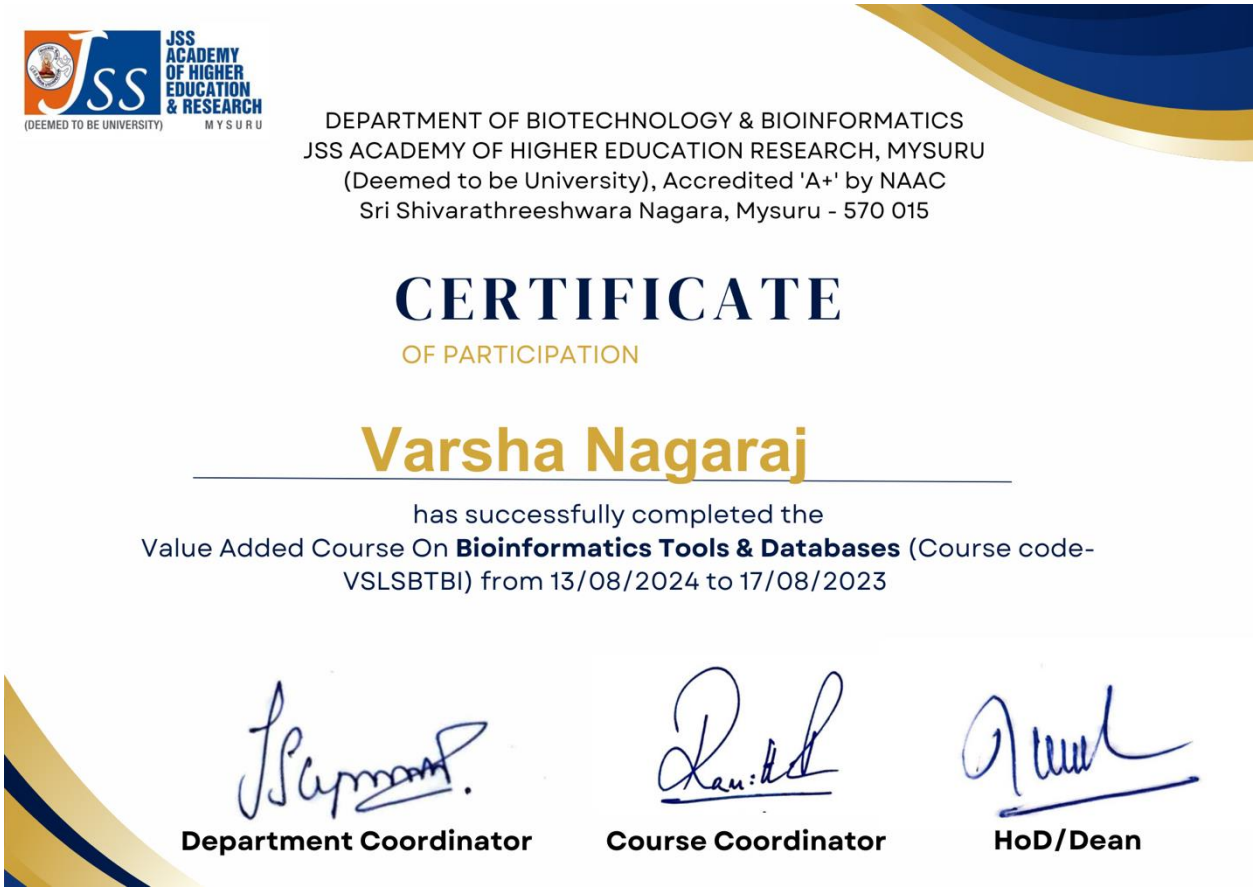
Mark only one oval.

	1	2	3	4	5	
Not	◯	◯	◯	◯	◯	Very much

3. Name *

4. Reg No (JSS) *

Certificate :



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(Deemed to be University), Accredited 'A+' by NAAC
Sri Shivarathreeshwara Nagara, Mysuru - 570 015

CERTIFICATE

OF PARTICIPATION

Varsha Nagaraj

has successfully completed the
Value Added Course On **Bioinformatics Tools & Databases** (Course code-VSLSBTBI) from 13/08/2024 to 17/08/2023

Department Coordinator | Course Coordinator | HoD/Dean