MAHISHADAL RAJ COLLEGE

(Govt. Sponsored)

NAAC Accredited 'A' Grade College
DST (FIST) Govt. Of India approved College, NSDC Training Partner
Estd. : 1946

Mahishadal : Purba Medinipur   **Phone STD 03224**   No. 240220

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Ref. No........................   **Date:**

Online ADD ON COURSE 2020-21

Organised by Department Zoology & Computer Science

Topic: Basic Bioinformatics

Add on course summary:

REPORT:

Name of the course- Basic Bioinformatics

Course coordinator: *Dr. Subhamoy Das*, (Associate Professor, HOD, Department of Zoology , Mahishadal Raj College)

Date of commencement: 17.08.2020

Date of completion: - 31.08.2020

Number of participant enrolled: 30

Total duration day: 15

Total duration hour: 30

Evaluation method:- Paper pen MCQ and practical work (Online)

RESULT DETAILS:-

Number of student participate in this program: 30

Number of student completes this program: 25

Number of student got certificate in this program: 25

Name of the course: Basic Bioinformatics

Course coordinator: *Dr. Subhamoy Das*, (Associate Professor, HOD, Department of Zoology , Mahishadal Raj College)

Basic Bioinformatics

✦ About the course:

Bioinformatics course is an interdisciplinary field of Science that deals with Biological information. The two main Sciences that find applications in bioinformatics are Molecular Biology and Genetics. Bioinformatics course is a fusion of many fields such as Computer Science, Mathematics, Engineering, and Statistics. These fields combine to examine and exemplify Biological data. In other words, a Bioinformatics course is a study of information on Biological data. The Bioinformatics course is among the fastest growing fields in the field of Science, which helps in advancements of Biology as well as the processing and storing of related data. These tools are used in Bioinformatics courses to advance Biology research and to handle and store data linked to Biology. In a Bioinformatics course, candidates can study a variety of areas holistically while earning their degree.

✦ Learning outcomes:

Completing a bioinformatics course opens up various job opportunities in diverse sectors where biological data analysis and computational biology skills are in demand. Job opportunities in bioinformatics continue to grow as advancements in genomics, personalized medicine, and data-driven research become increasingly important in various industries. Completion of this course, you have job opportunities in the fields of computational biologist, genomic data analyst, clinical bioinformatician, biotech research scientist, data scientist in life science, agricultural bioinformatics specialist, and environmental bioinformatician. Along with the booming Bioinformatics career scope, it has also become one of the highest-paid sectors and is continually rising.

✦ Target audience:
Any interested students (UG & PG), research scholars, faculty members and, Industrial personals. Persons who have very much interest in Software based work.

✦ Course content overview:

Bioinformatics is an interdisciplinary field of science that develops methods and software tools for understanding biological data, especially when the data sets are large and complex. Bioinformatics uses biology, chemistry, physics, computer science, computer programming, information engineering, mathematics and statistics to analyze and interpret biological data. The subsequent process of analyzing and interpreting data is referred to as computational biology. Computational, statistical, and computer programming techniques have been used for computer simulation analyses of biological queries. They include reused specific analysis "pipelines", particularly in the field of genomics, such as by the identification of genes and single nucleotide polymorphisms (SNPs). These pipelines are used to better understand the genetic basis of disease, unique adaptations, desirable properties (esp. in agricultural species), or differences between populations. Bioinformatics also includes proteomics, which tries to understand the organizational principles within nucleic acid and protein sequences.

Schedule: Total 30 hours

DAY	SCHEDULE
Day 1	Introduction to Bioinformatics (T) (2 hours)
Day 2	Nucleic acid databases and sequence retrieval (T+P) (2 hours)
Day 3	Sequence alignment- BLAST, pair wise sequence alignment, multiple sequence alignment. (T+P) (2 hours)
Day 4	Phylogenetic analysis and interpretation (T+P) (2 hours)
Day 5	Protein databases and protein structure analysis (T+P) (2 hours)
Day 6	Protein interaction study (T+P) (2 hours)
Day 7	Protein Tertiary structure and Visualization tools(T+P)(2 hours)
Day 8	Enzyme database. (T+P) (2 hours)
Day 9	Bioinformatics in Agriculture – Challenges and Opportunities (T) (2 hours)
Day 10	Basics of molecular interactions in medicinal chemistry and Drug design (P) (2 hours)
Day 11	Artificial Intelligence for Bioinformatics. (T) (2 hours)
Day 12	Introduction to functional genomics data analysis (T). (2 hours)
Day 13	Hands-on training session on "Genomics data analysis in R 1 (P). (2 hours)
Day 14	Hands-on training session on "Genomics data analysis in R 2 (P)
Day 15	Hands-on training session on "Genomics data analysis in R 3 (P)

Detail Work Schedule

Date	Day	Contents	Time	Duration	Experts	Designation
17.08.20	1	Introduction to Bioinformatics (T)	12 to 2pm	2	Dr. Subhamoy Das	HOD DEP. of ZOOLOGY
18.08.20	2	Nucleic acid databases and sequence retrieval (T+P)	1 to 3 pm	2	Dr. Subhamoy Das	HOD DEP. of ZOOLOGY
19.08.20	3	Sequence alignment- BLAST, pairwise sequence alignment, multiple sequence alignment. (T+P)	3 to 5pm	2	Prof. Saheli Maiti	SACT Mahishadal Raj College
20.08.20	4	Phylogenetic analysis and interpretation (T+P)	03 to 05pm	2	Prof. Saheli Maiti	SACT Mahishadal Raj College
21.08.20	5	Protein databases and protein structure analysis (T+P)	02 to 04pm	2	Dr. Subhamoy Das	HOD DEP. of ZOOLOGY
22.08.20	6	Protein interaction study (T+P)	01 to 03pm	2	Dr. Subhamoy Das	HOD DEP. of ZOOLOGY
23.08.20	7	Protein Tertiary structure and Visualization tools(T+P)preparation (T+P)	03 to 05pm	2	Dr. Subhamoy Das	HOD DEP. of ZOOLOGY

24.08.20	8	Enzyme database	02 to 05pm	2	Prof. Sagnik Mandal	SACT Mahishadal Raj College
25.08.20	9	Bioinformatics in Agriculture – Challenges and Opportunities (T)	02 to 04pm	2	Prof. Manik Das	SACT Mahishadal Raj College
26.08.20	10	Basics of molecular interactions in medicinal chemistry and Drug design (P)	01 to 03pm	2	Prof. Manik Das	SACT Mahishadal Raj College
27.08.20	11	Artificial Intelligence for Bioinformatics. (T)	02 to 04pm	2	Prof. Moumita Jana	SACT Mahishadal Raj College
28.08.20	12	Introduction to functional genomics data analysis (T)	02 to 04pm	2	Dr. Rajkumar Guchhait	SACT Mahishadal Raj College
29.08.20	13	Hands-on training session on "Genomics data analysis in R 1 (P)	01 to 03pm	2	Dr. Rajkumar Guchhait	SACT Mahishadal Raj College
30.08.20	14	Hands-on training session on "Genomics data analysis in R 2 (P)	02 to 04pm	2	Dr. Rajkumar Guchhait	SACT Mahishadal Raj College
31.08.20	15	Hands-on training session on "Genomics data analysis in R 3 (P) Evaluation, valediction, feedback	02 to 04pm	2	Dr. Subhamoy Day, Dr. Rajkumar Guchhait, Prof. Sagnik Manadal, Prof. Manik Das and Prof. Moumita Jana. DR.Asim Kr Bera	HOD & SACT., Zoology; Principal, MRC
				30 hours		

Course structure and examination scheme:

Course name	Theory classes (hr.)	Practical classes (hr.)	Continuous assessment		Total marks
			Theory	Practical	
Basic bioinformatics	15	15	50	50	100

Participant's Details and attendance:

Enrolment Details of Students

Sl. No.	Student ID	Roll No.	Name
1.	B.Sc/19/0095	2190095	SIBSANKAR MAITY
2.	B.Sc/19/0096	2190096	SUSMITA MANNA
3.	B.Sc/19/0097	2190097	BABLU SAMANTA
4.	B.Sc/19/0098	2190098	SHOUVIK DAS
5.	B.Sc/19/0099	2190099	AMIT KUILI
6.	B.Sc/19/0100	2190100	SK SELIM ALI
7.	B.Sc/19/0101	2190101	BANDHAN BARIK
8.	B.Sc/19/0102	2190102	SUKDIP DAS
9.	B.Sc/19/0157	2190157	MONGALDIP MONDAL
10.	B.Sc/19/0180	2190180	NOTAN GHORAI
11.	B.Sc/19/0181	2190181	KRISHNA PRASAD DAS
12.	B.Sc/19/0183	2190183	PABITRA JANA
13.	B.Sc/19/0253	2190253	KOUSIK MITRA
14.	B.Sc/19/0278	2190278	PRIYANKA KHANRA
15.	B.Sc/19/0280	2190280	ABHIJIT DINDA
16.	B.Sc/19/0282	2190282	SOUMEN MAITY
17.	B.Sc/19/0337	2190337	TANUSHREE BHUNIA
18.	B.Sc/19/0338	2190338	ANANYA SANYAL
19.	B.Sc/19/0508	2190508	ARCHANA KUILYA
20.	B.Sc/19/0512	2190512	RABINDRA PRADHAN
21.	B.Sc/19/0523	2190523	TANMOY CHAKRABORTY
22.	B.Sc/19/0060	2190060	PARBATI BHOWMIK
23.	B.Sc/19/0145	2190145	ESHA BHOWMIK
24.	B.Sc/19/0146	2190146	JAYEETA MAITY
25.	B.Sc/19/0256	2190256	NILADRI DHARA
26.	B.Sc/19/0345	2190345	KRITITAPA DAS
27.	B.Sc/19/0450	2190450	SUJAN MAITY
28.	B.Sc/19/0534	2190534	ZEBA HOSSAIN
29.	B.Sc/19/0559	2190559	SUDIP SAMANTA
30.	B.Sc/19/0560	2190560	ALOK KUMAR JANA

(b) Pearson
(c) Richard Durbin
(d) Michael.J.Dunn
4. Approximately how many base pairs does the human genome contain?
(a) 6 billion base pairs
(b) 5 billion base pairs
(c) 3 billion base pairs
(d) 4 billion base pairs
5. What is the term for drug identification through genomic study?
(a) Genomics
(b) Pharmacogenomics
(c) Pharmacogenetics
(d) Cheminformatics
6. What is the term for drug identification through genomic study?
(a) Genomics
(b) Pharmacogenomics
(c) Pharmacogenetics
(d) Cheminformatics
7. What is the one fact about FASTA that is incorrect?
(a) In reality, it was created before BLAST and was the first database similarity search tool.
(b) A string of identical residues with a length of k is searched for using the "hashing" method by FASTA.
(c) The string of residues is referred to as a "block."
(d) Its acronym is FAST ALL

SAMPLE CERTIFICATE OF COURSE COMPLETION

CERTIFICATE

OF COURSE COMPLETION

THIS IS TO CERTIFY THAT

SK SELIM ALI

has successfully completed the **Add-on Course** on Basic Bioinformatics held during 2020-2021 academic year at Mahishadal Raj College.

Course Co-ordinator　　　　**IQAC Co-ordinator**　　　　**Principal**

CERTIFICATE

OF COURSE COMPLETION

THIS IS TO CERTIFY THAT

TANMOY CHAKRABORTY

has successfully completed the **Add-on Course** on Basic Bioinformatics held during 2020-2021 academic year at Mahishadal Raj College.

Course Co-ordinator　　　　**IQAC Co-ordinator**　　　　**Principal**