

Rajarshi Shahu Mahavidyalaya, Latur

(Autonomous)

Structured Work Plan for Teaching

(Dec-2018 to March-2019)

Details of Classes to be taught

| Class | Name of Asstt. Prof. | Subject | Paper |
|-------------|----------------------|---------------|-----------------------|
| B.Sc. BT TY | Dr. S. S. Kulkarni | Biotechnology | Computational Biology |
| M.Sc. BT SY | | | Geonomics & Protomics |

2. Summary of Lesson Plan

Name of Teacher: Dr. S. S. Kulkarni

Class: B. Sc. BT TY (Six Semester)

Class: M.Sc. BT SY (Fourth Semester)

| Subject | Unit and Chapter to be covered | Date | No. of Lectures | Academic activities to be organized | No. of Test / Assignment with topic and date | |
|-----------------------|--|-----------|-----------------|-------------------------------------|--|----------------|
| Computational Biology | <p>Unit -2: What is bioinformatics and its relation with molecular biology.</p> <p>Examples of related tools (FASTA, BLAST, RASMOL), databases (GENBANK, Pubmed, PDB) and software (RASMOL) Data generation;</p> <p>Generation of large scale molecular biology data (Through Genome sequencing,</p> <p>Protein sequencing, Gel electrophoresis, Applications of Bioinformatics.</p> <p>Unit -3: Introduction to data types and Source. Population and sample, Classification and Presentation of Data.</p> | 29 Nov 18 | 02 | Guest Lecture | Unit Test – I | |
| | | | | Quiz Contest | 20.01.2019 | |
| | | to | 31 Dec 18 | 02 | Classroom Seminar | Unit Test – II |
| | | | | | 02 | 22.03.2019 |
| | | | 02 | | | |

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|---|---------------------------------------|----|--|--|
| <p>Quality of data, private and public data sources. General Introduction of Biological Databases;</p> | | 04 | | |
| <p>Nucleic acid databases (NCBI, DDBJ, and EMBL).</p> | | 02 | | |
| <p>Protein databases (Primary, Composite, and Secondary).</p> | <p>01 Jan 19 to 18 Jan 19</p> | 05 | | |
| <p>Unit -4: Introduction to Sequences, alignments, Local alignment and Global alignment (algorithm and example),</p> | | 03 | | |
| <p>Pairwise alignment (BLAST and FASTA Algorithm) and multiple sequence alignment (Clustal W algorithm).</p> | | 04 | | |
| <p>Methods for presenting large quantities of biological data: sequence viewers, 3D structure viewers</p> | <p>25 Feb 19 to</p> | 03 | | |
| <p>(Rasmol, SPDBv, Chime, Cn3D, PyMol).</p> | <p>05 Mar 19</p> | 04 | | |
| <p>Unit -1: Introduction Overview and functions of a computer system, storage, devices, memory, etc.</p> | | 03 | | |

The Minicomputer, Mainframe Computers, Parallel Processing Computer, The Super Computer, etc.

03

The Internet and its Resources, World Wide Web (WWW): associated tools, services, resources and various terminologies;

18 Feb 19
to
07 Mar 19

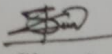
02

Introduction to operating systems; File System Concept – NTFS, FAT, etc.

02

| Practical to be covered | Date | No. of Practicals |
|--|---------------------|-------------------|
| 1) A guided tour of NCBI/EBI : Data access – standard search engines : data retrieval tools – Entrez, DBGET and SRS (sequence retrieval systems); software for data building. submission of new revised data | 12/12/18 & 13/12/18 | 02 |
| 2) Sequence homology as product of molecular evolution, sequence similarity searches | 19/12/18 & 20/12/18 | 02 |
| 3) sequence alignment-global, local, end free-space; measurement of sequence similarity, similarity and homology | 26/12/18 & 27/12/18 | 02 |
| 4) Multiple sequence alignment Phylogeny reconstruction, PHYLIP package | 03/01/19 & 04/01/19 | 02 |
| 5) Word processing Getting an amino acid sequence, nucleotide sequence by blasting. | 09/01/19 & 10/01/19 | 02 |
| 6) Multiple sequence alignment | 16/01/19 & 17/01/19 | 02 |
| 7) Homology modeling Protein identification & characterization with peptide mass fingerprinting data. | 23/01/19 & 24/01/19 | 02 |
| 8) Primary structure analysis of proteins. | 30/01/19 & 31/01/19 | 02 |
| 9) Secondary structure analysis of proteins (helical content of peptide). | 06/01/19 & 07/01/19 | 02 |
| 10) Tertiary structure analysis of proteins (3D structure prediction). | 13/01/19 & 14/01/19 | 02 |

Name of Lecturer: Dr. Kulkarni S. S.


Signature