

Department of Biotechnology
Keral Verma Subharti College of Science
SWAMI VIVEKANAND SUBHARTI UNIVERSITY

(Established under UP Govt. Act No. 29 of 2008 and approved under section 2(I) of UGC Act 1956)
Ph. 0121-2439578, 2439052, 3058031, 3056032; Telefax: 0121



Ref. No. – KVSCOS/BT/2023/BOS/001

Dated: 07 Jan 2023

NOTICE

A meeting of Board of Studies will be held on 11 Jan 2023 at 10:00 AM. Following are agenda items for the same.

1. **Agenda Item No. 1:** To confirm the minutes of the Board of Studies meeting held on 06/06/2022.
2. **Agenda Item No. 2:** To consider the Action Taken Report on the minutes of Board of Studies held on 06/06/2022.
3. **Agenda Item No. 3:** To prepare the proposal about Seminar/Workshops/Industrial and academic visits to improve the knowledge of students.
4. **Agenda Item No. 4:** To discuss about the seat intake for B.Sc Biotechnology, B.Sc Biochemistry and M.Sc Biotechnology programs for upcoming session 2023-24.
5. **Agenda Item No. 5:** To discuss about the approval of the External expert for departmental BOS members (Dr. Monika Asthana, Head, Department of Biotechnology, School of Life Sciences, DBRAU, Khandari Campus Agra.
6. Any other items with the permission of the chairman.
You are requested to make it convenient to attend the same.


Prof. (Dr.) Sangeeta Dayal,
Chairperson

Copy to:

External expert:

1. Dr. Raj Singh (Professor & Head, Department of Biotechnology, MMU, Mullana, Ambala)

Internal Members:

2. Dr. Ashwani Kumar (Associate professor)
3. Dr. Reshu Chaudhary (Assistant professor)
4. Dr. Manjul Mungali (Assistant professor)
5. Dr. Devendra Kumar (Assistant professor)
6. Dr. Nisha Malik (Assistant professor)
7. Dr. Khyati Lehari (Assistant professor)
8. Sonam Yadav S/O Mr. Rajvir Singh 2021-23 batch, mobile no. 7020916581



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Submitted to Faculty Board

Attendance for Meeting of Board of Studies held on 11 Jan 2023 at
10:00 AM at the office of Head, Department of Biotechnology

The following members were attended the meeting

1. Dr. Sangeeta Dayal - Chairperson *Sangeeta*
2. Dr. Monika Asthana - External Expert *Monika*
3. Dr. Ashwani Kumar - Member *Ashwani*
4. Dr. Reshu Chaudhary - Member *Reshu*
5. Dr. Manjul Mungali - Member *Manjul*
6. Dr. Devendra Kumar - Member *Devendra*
7. Dr. Nisha Malik - Member *Nisha*
8. Dr. Khyati Lehari - Member *Khyati*
9. Sonam Yadav D/O Mr. Rajvir Singh, Batch 2018-21, Mobile No.: 7020916581

(Alumni) Sonam Yadav



Department of Biotechnology

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Ref. No. – KVSCOS/BT/2023/BOS/004

Dated: 12 January 2023

Minutes for Meeting

A meeting of Board of Studies was held on 11 January 2023 at 10:00 AM in the office of the Head, Department of Biotechnology.

Following members attended the meeting

1. Dr. Sangeeta Dayal - Chairperson
2. Dr. Monika Asthana - External Expert
3. Dr. Ashwani Kumar - Member
4. Dr. Reshu Chaudhary - Member
5. Dr. Manjul Mungali - Member
6. Dr. Devendra Kumar - Member
7. Dr. Nisha Malik - Member
8. Dr. Khyati Lehri - Member
9. Sonam Yadav D/O Mr. Rajvir Singh, Batch 2018-2021, Mobile no. 7020916581 (Alumni)

At the onset, the Chairperson BOS welcomed all the members and thanked outside experts for sparing their time. The items were taken up as per agenda.

1. **Agenda Item No. 1:** To confirm the minutes of the Board of Studies meeting held on 11 Jan 2023.
Resolution: The Board confirmed the minutes.
2. **Agenda Item No. 2:** To consider the Action Taken Report on the minutes of Board of Studies held on 11 Jan 2023 (Annexure I).
Resolution: The board considered the Action Taken Report.
3. **Agenda Item No. 3:** To prepare the syllabus and discuss starting M.Sc Biochemistry and M.Sc Microbiology as new programs.
Resolution: After detailed discussion the board member unanimously considered the regulation and syllabus will be prepared with CBCS pattern and approved to start M.Sc Biochemistry and M.Sc Microbiology as new programs.
4. **Agenda Item No. 4:** To revise the syllabus of B.Sc Biochemistry and B.Sc Bioinformatics.
Resolution: After detailed discussion the board member considered and approved the revision of syllabus of B.Sc Biochemistry and B.Sc Bioinformatics.
5. **Agenda Item No. 5:** To discuss purchasing essential chemicals and reagents for academic session 2023-24.
Resolution: The board member approved purchasing essential chemicals and reagents for academic session 2023-24.
6. **Agenda Item No. 6:** To discuss value added courses for the session 2023-24.
Resolution: The members approved and recommended to Faculty Board.
7. **Agenda Item No. 7:** To discuss the planning of Industrial/academic visits
Resolution: The members approved Industrial/academic visits.
8. **Agenda Item No. 8:** To discuss the establishment of Animal Biotechnology laboratory.
Resolution: The members recommended to Faculty Board.


Dr. Sangeeta Dayal,
Chairperson



Department of Biotechnology

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Ref. No. – KVSCOS/BT/2023/BOS/001

Dated: 16 January, 2023

Action Taken Report

The meeting of the board of studies of Department of Biotechnology was held on 11 January, 2023 in the presence of external and internal members. Following agenda were discussed in the meeting and the actions taken of the agendas are given below:

Agenda Item	Decision/Recommendation	Action Taken
1. Agenda Item No. 1: To confirm the minutes of the Board of Studies meeting held on 06/06/2022.	Noted	Noted
2. Agenda Item No. 2: To consider the Action Taken Report on the minutes of Board of Studies held on 06/06/2022.	Noted	Noted
3. Agenda Item No. 3: To prepare the proposal about Seminar/Workshops/Industrial and academic visits to improve the knowledge of students.	After detailed discussion, the committee members unanimously approved the proposal about Seminar/Workshops/Industrial and academic visits to improve the knowledge of students.	Recommended to Faculty board.
4. Agenda Item No. 4: To discuss about the seat intake for B.Sc Biotechnology, B.Sc Biochemistry, B.Sc Bioinformatics and M.Sc Biotechnology programs for upcoming session 2023-24.	All the members recommended seat intake 15 for B.Sc Biotechnology, 05 for B.Sc Biochemistry and B.Sc Bioinformatics each, and 10 for M.Sc Biotechnology programs for upcoming session 2023-24.	Recommended to Faculty board.
5. Agenda Item No. 5: To discuss about the approval of the External expert for departmental BOS members (Dr. Monika Asthana, Head, Department of Biotechnology, School of Life Sciences, DBRAU, Khandari Campus Agra.	Recommended to Faculty board.	Noted


HOD/Incharge

(Department of Biotechnology)

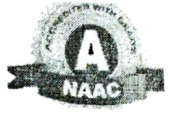
cc:

- Office of the Dean
- Members



Department of Biotechnology
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Ref. No. – KVSCOS/BT/2021/BOS/006

Dated: 06 Aug 2022

NOTICE

A meeting of Board of Studies will be held on 08 August 2022 at 02:00 PM. Following are agenda items for the same.

1. **Agenda Item No. 1:** To confirm the minutes of the Board of Studies meeting held on 03/07/2021.
 2. **Agenda Item No. 2:** To consider the Action Taken Report on the minutes of Board of Studies held on 03/07/2021.
 3. **Agenda Item No. 3:** To consider and discuss about to increase the seat intake of B.Sc. Biotechnology program from intake 30 to 60.
 4. **Agenda Item No. 4:** To consider and approval of NEP syllabus of B.Sc. Biotechnology programme.
 5. Any other items with the permission of the chairman.
- You are requested to make it convenient to attend the same.


Dr. Ashwani Kumar,
Chairperson

Copy to:

External expert:

1. Dr. Raj Singh (Professor, MMU, Mullana, Ambala)

Internal Members:

1. Dr. Ashwani Kumar (Associate professor)
2. Dr. Reshu Chaudhary (Assistant professor)
3. Dr. Manjul Mungali (Assistant professor)
4. Dr. Nisha Malik (Assistant professor)
5. Dr. Khyati Lehari (Assistant professor)
6. Dr. Devendra Kumar (Assistant professor)
7. Mansi Sharma D/O Mr. Vinod Kumar Sharma 2018-2021 batch mobile no. 8958004882 (Alumni)

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Ref. No. - KVSCOS/BT/2021/BOS/007

Dated: 08 Aug 2022

Attendance for Meeting of Board of Studies held on 08 Aug 2022 at 02:00 PM

- 1 Dr. Ashwani Kumar - In Chair *Shmi*
- 2 Dr. Raj Singh - External Expert *Rohit Rana*
- 3 Dr. Reshu Chaudhary - Member *R*
- 4 Dr. Manjul Mungali - Member *Nisha*
- 5 Dr. Nisha Malik - Member *Khyati*
- 6 Dr. Khyati Lehari - Member *Khyati*
- 7 Dr. Devendra Kumar - Member *Devendra*
- 1 Mansi Sharma D/O Mr. Vinod Kumar Sharma 2018-2021 batch mobile no. 8958004882
(Alumni) *Mansi*



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Ref. No. – KVSCOS/BT/2021/BOS/008

Dated: 17 August 2022

Minutes for Meeting of Board of Studies held on held on 08 August 2022 at 02:00 PM


A meeting of Board of Studies was held on at 08/08/2022 2:00 PM in the office of the Head, Department of Biotechnology.

Following members attended the meeting

1. Dr. Ashwani Kumar - In Chair
2. Dr.Raj Singh - External Expert
3. Dr. Reshu Chaudhary - Member
4. Dr. ManjulMungali - Member
5. Dr. Nisha Malik - Member
6. Dr. Khyati Lehari - Member
7. Dr. Devendra Kumar - Member
8. Manshi Sharma D/O Mr. Vinod Kumar Sharma -2018-2021 batch mobile no. 8958004882(Alumni)

At the onset, the Chairperson BOS welcomed all the members and thanked outside experts for sparing their time. The items were taken up as per agenda.

1. **Agenda Item No. 1:** *To confirm the minutes of the Board of Studies meeting held on 22 December 2020.*
Resolution: The Board confirmed the minutes.
2. **Agenda Item No. 2:** *To consider the Action Taken Report on the minutes of Board of Studies held on 22 December 2020(Annexure -I).*
Resolution: The board considered the Action Taken Report.
3. **Agenda Item No. 3:** *To consider and approve for increasing the seats of B.sc Biotechnology Programme in take from 30 to 60 .*
Resolution: The members approved and recommended to COE
4. **Agenda Item No. 4:** *To consider and discuss about the Bsc Biotechnology course curriculum (Syllabus) as per NEP pattern (Annexure -II).*
Resolution: After detailed discussion the board member unanimously considered the regulation and syllabus of B.Sc. Biotechnology with NEP pattern because UGC has emphasized to adopt NEP pattern.


Dr. Ashwani Kumar,
Chairperson



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Ref. No. – KVSCOS/BT/2022/BOS/006

Dated: 18 August 2022

Action Taken Report

The meeting of the board of studies of Department of Biotechnology was held on 08 August 2022 in the presence of external and internal members. Following agenda were discussed in the meeting and the actions taken of the agendas are given below:

Agenda Item	Decision/Recommendation	Action Taken
1. Agenda Item No.1: To confirm the minutes of the board of studies meeting held on 08 August 2022	Noted	Noted
2. Agenda Item No.2: To consider the Action Taken Report on the minutes of Board of Studies held on 08 August 2022	Noted	Note Odd
3. Agenda Item No.3: To consider and discuss about to increase the seat intake of B.Sc. Biotechnology program from intake 30 to 60.	After detailed discussion, the committee members unanimously approved the increase the seat intake of B.Sc. Biotechnology program from intake 30 to 60.	Noted
4. Agenda Item No.4: To consider and approval of NEP syllabus of B.Sc. Biotechnology programme.	The committee members agreed and approved NEP syllabus of B.Sc. Biotechnology programme.	Noted


HOD/Incharge

(Department of Biotechnology)

- cc:
- Office of the Dean
 - Members

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Ref. No. - KVSCOS/BT/2022/BoS/001

Dated: 30 May 2022

NOTICE

A meeting of Board of Studies will be held on 06 June 2022 at 10:00 AM at the office of Head, Department of Biotechnology. Following are agenda items for the same.

1. **Agenda Item No. 1:** To confirm the minutes of the Board of Studies meeting held on 3 July 2021.
2. **Agenda Item No. 2:** To consider the Action Taken Report on the minutes of Board of Studies held on 3 July 2021 (Annexure -I).
3. **Agenda Item No. 3:** To discuss about the revision of course structure and syllabus of UG programmes (B.Sc. Biotechnology, B.Sc. Biochemistry, B.Sc. Microbiology) as suggested by UP State Council of Higher Education (Annexure -II).
4. **Agenda Item No. 4:** To increase the intake capacity in B.Sc. Biotechnology programme.
5. **Agenda Item No. 5:** To prepare the proposal about Seminars/ Workshops/ Industrial and Academic Visits to improve the knowledge level of students.
6. **Agenda Item No. 6:** To discuss and consider the value-added courses in the programme of UG and PG for the session 2022-23.
7. **Agenda Item No. 7:** To approve the new faculty names as BoS Members (Dr. Ashwani Kumar, Dr. Devendra Kumar, Dr. Khyati Lehari)

Any other items with the permission of the chairman.

You are requested to make it convenient to attend the same.


Dr. Reshu Chaudhary
Chairperson

Copy to:

External expert:

1. Dr. Raj Singh (Professor & Head, Department of Biotechnology, MMU, Mullana, Ambala)

Internal Members:

1. Dr. Reshu Chaudhary (Assistant Professor)
2. Dr. Amit Kumar (Assistant professor)
3. Dr. Manjul Mungali (Assistant professor)
1. Dr. Nisha Malik (Assistant professor)

2. Shubhkamna D/O Mr. Lokesh Kumar, Batch: 2016-19, Mobile

No.: 8445965014 (Alumni)

Submitted to Faculty Board

Attendance for Meeting of Board of Studies held on 6 June 2022 at 10:00 AM in Office of the Head, Department of Biotechnology

1. Dr. Reshu Chaudhary - Chairperson *Reshu*
2. Dr. Raj Singh - External Expert *RSS*
3. Dr. Amit Kumar - Member *A*
4. Dr. Manjul Mungali - Member *M*
5. Dr. Nisha Malik - Member *N*
6. Shubhkamna D/O Mr. Lokesh Kumar, Batch: 2016-19, Mobile No.: 8445965014
(Alumni) *Shubhkamna*

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Ref. No. – KVSCOS/BT/2022/BOS/002

Dated: 07 June 2022

Minutes of Meeting

A meeting of Board of Studies was held on 06 June 2022 at 10:00 AM in the office of the Head, Department of Biotechnology.

Following members attended the meeting

1. Dr. Reshu Chaudhary - Chairperson
2. Dr. Raj Singh - External Expert
3. Dr. Amit Kumar - Member
4. Dr. Manjul Mungali - Member
5. Dr. Nisha Malik - Member
6. Shubhkamna D/O Mr. Lokesh Kumar, Batch: 2016-19, Mobile No.: 8445965014 (Alumni)

At the onset, the Chairperson BOS welcomed all the members and thanked outside expert for sparing their time. The items were taken up as per the agenda.

1. **Agenda Item No. 1:** *To confirm the minutes of the Board of Studies meeting held on 3 July 2021.*

Resolution: The Board confirmed the minutes of the meeting.

2. **Agenda Item No. 2:** *To consider the Action Taken Report on the minutes of Board of Studies held on 3 July 2021 (Annexure -I).*

Resolution: The board considered the Action Taken Report.

3. **Agenda Item No. 3:** *To discuss about the revision of course structure and syllabus of UG programme B.Sc. Biotechnology by adopting curriculum suggested by NEP.*

Resolution: After detailed discussion the board member unanimously considered the regulation and syllabus of UG programmes (B.Sc. Biotechnology) as per NEP 2020 suggested by UP State Council of Higher Education.

4. **Agenda Item No. 4:** *To introduce new UG programmes (B.Sc. Biochemistry, B.Sc. Microbiology and B.Sc. Bioinformatics) under NEP 2020 guidelines as suggested by UP State Council of Higher Education (Annexure -II).*

Resolution: After detailed discussion the board member unanimously considered the regulation and syllabus of UG programmes (B.Sc. Biochemistry, B.Sc. Microbiology and B.Sc. Bioinformatics) as per NEP 2020 suggested by UP State Council of Higher Education.

5. **Agenda Item No. 5:** *To include new interdisciplinary courses in UG programs as per regulation of NEP-2020 for the academic session 2022-23.*

Resolution: Board members considered the interdisciplinary courses for UG programs for academic session 2022-23.

6. **Agenda Item No. 6:** *To increase the intake capacity in B.Sc. Biotechnology programme.*

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Resolution: All the BoS Members considered to increase the intake capacity in B.Sc. Biotechnology i.e. 30 to 60.

Agenda Item No. 7: To prepare the proposal about Seminars/ Workshops/ Industrial and Academic Visits to improve the knowledge level of students.

Resolution: Unanimously approved and recommended to Faculty Board.

Agenda Item No. 8: To discuss and consider the value-added courses in the programme of UG and PG for the session 2022-23.

Resolution: Unanimously approved and recommended to Faculty Board.

Agenda Item No. 9: To approve the new faculty names as BoS Members (Dr. Ashwani Kumar, Dr. Devendra Kumar, Dr. Khyati Lehari)

Resolution: Approved and recommended to Faculty Board.

A handwritten signature in black ink, appearing to read 'Reshu', is written over a horizontal line.

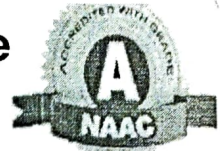
Dr. Reshu Chaudhary
Chairperson



Department of Biotechnology Keral Verma Subharti College of Science

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Ref No. – KVSCOS/BT/2022/BOS/003

Dated 29 July 2022

Action Taken Report

The meeting of the BOS of department was held on 06 June 2022 in the presence of external and internal members. Following agenda were discussed in the meeting. The actions taken of the agendas are given below.

Agenda Item	Decision/Recommendation	Action taken
1. Agenda Item No. 1: To confirm the minutes of the Board of Studies meeting held on 06 June 2022.	Minutes Confirmed	No action required
2. Agenda Item No. 2: To consider the Action Taken Report on the minutes of Board of Studies held on 06 June 2022.	Members Noted the Action taken	Noted
3. Agenda Item No. 3: To discuss about the revision of course structure and syllabus of UG programme B.Sc. Biotechnology by adopting curriculum suggested by NEP.	After detailed discussion the board member unanimously considered the regulation and syllabus of UG programmes (B.Sc. Biotechnology) as per NEP 2020 suggested by UP State Council of Higher Education.	Recommended to Faculty board
4. Agenda Item No. 4: To introduce new UG programmes (B.Sc. Biochemistry, B.Sc. Microbiology and B.Sc. Bioinformatics) under NEP 2020 guidelines as suggested by UP State Council of Higher Education (Annexure -II).	After detailed discussion the board member unanimously considered the regulation and syllabus of UG programmes (B.Sc. Biochemistry, B.Sc. Microbiology and B.Sc. Bioinformatics) as per NEP 2020 suggested by UP State Council of Higher Education.	Recommended to Faculty board
5. Agenda Item No. 5: To include new interdisciplinary courses in UG programs as per regulation of NEP-2020 for the academic session 2022-23.	Board members considered the interdisciplinary courses for UG programs for academic session 2022-23.	Approved by Faculty board
6. Agenda Item No. 6: To increase the intake capacity in B.Sc. Biotechnology programme.	All the BoS Members considered to increase the intake capacity in B.Sc. Biotechnology i.e. 30 to 60.	Approved by Faculty board
7. Agenda Item No. 7: To prepare the proposal about Seminars/ Workshops/ Industrial and Academic Visits to improve the	Recommended to faculty board	Approved by faculty board for the implementation

Department of Biotechnology

Keral Verma Subharti College of Science

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knowledge level of students.

8. <u>Agenda Item No. 8:</u> To discuss and consider the value-added courses in the programme of UG and PG for the session 2022-23.	Approved and recommended to Faculty Board.	Approved by faculty board for the implementation


Dr. Reshu Chaudhary
(Chairperson)

Programme/Class:Certificate	Year:First	Semester:First
Subject: Biochemistry		
CourseCode: B110101T	Course Title: Fundamental of Biochemistry	
Courseoutcomes: The student at the completion of the course will learn to understand: <ul style="list-style-type: none"> • Basic details of structure, function of carbohydrate molecules and its classification • Details of structure, function and classification of amino acid & structural levels of protein molecules • Structure and function of fatty acids, storage and structural lipids • Details of structure and Function of Nucleotide, DNA and RNA • Basic details of Vitamin molecules and its classification • Classification, structural features and Function of Plant & Animal Hormone 		
Credits:4		Core Compulsory
Max.Marks:25+75		Min. Passing Marks: As per rules
Total No. of Lectures-Tutorials-Practical (in hours per week): L-T-P:4-0-0		

Unit	Topics	No. of Lectures (60)
I	Basics of Biochemistry <ul style="list-style-type: none"> • History of biochemistry with special reference to contribution of Indian biochemists. • General idea about normality, molarity, molality, percentage solutions, mole fraction. W/v and v/v solutions. • Concept of pH determinations using indicators, buffer solutions and their biological importance. • Water as universal solvent 	5
II	Amino acids and proteins <ul style="list-style-type: none"> • Structural features and classification, Physical properties, optical properties (Stereoisomerism) • Chemical properties of amino acids • Uncommon amino acids and their function. • Classification of protein, structural organization as primary, secondary, tertiary and quaternary structure of protein and characteristics of the peptide bond 	10
III	Carbohydrate <ul style="list-style-type: none"> • Monosaccharides - structure of aldoses and ketoses, Ring structure of sugars, conformation of sugars, mutarotation, anomers, epimers and enantiomers • Structure of biologically important sugar derivatives, oxidation and reduction of sugars • Formation of disaccharides, reducing and non-reducing disaccharide • Polysaccharides - homo- and heteropolysaccharides, structural and storage polysaccharides 	10

me/Class:Certificate

Year:First

Semester:First

Subject: Biochemistry

Code: B110101T

Course Title: Fundamental of Biochemistry

Course outcomes: The student at the completion of the course will learn to understand:

- Basic details of structure, function of carbohydrate molecules and its classification
- Details of structure, function and classification of amino acid & structural level of protein molecules
- Structure and function of fatty acids, storage and structural lipids
- Details of structure and Function of Nucleotide, DNA and RNA
- Basic details of Vitamin molecules and its classification
- Classification, structural features and Function of Plant & Animal Hormone

Credits:4

Core Compulsory

Max.Marks:25+75

Min. Passing Marks: As per rules

Total No. of Lectures-Tutorials-Practical (in hours per week): L-T-P:4-0-0

Unit	Topics	No. of Lectures (60)
I	<p>Basics of Biochemistry</p> <ul style="list-style-type: none"> • History and <u>scope of biochemistry in allied fields with special reference to contribution of Indian biochemical scientist.</u> • General idea about normality, molarity, molality, percentage solutions, mole fraction. W/v and v/v solutions. • Concept of pH determinations using indicators, buffer solutions and their biological importance. • Water as universal solvent 	5
II	<p>Amino acids and proteins</p> <ul style="list-style-type: none"> • Structural features and classification, Physical properties, optical properties (Stereoisomerism) • Chemical properties of amino acids • Uncommon amino acids and their function. • Classification of protein, structural organization as primary, secondary, tertiary and quaternary structure of protein and characteristics of the peptide bond 	10
III	<p>Carbohydrate</p> <ul style="list-style-type: none"> • Monosaccharides - structure of aldoses and ketoses, Ring structure of sugars, conformation of sugars, mutarotation, anomers, epimers and enantiomers • Structure of biologically important sugar derivatives, oxidation and reduction of sugars • Formation of disaccharides, reducing and non-reducing disaccharide • Polysaccharides-homo-and heteropolysaccharides, structural and storage polysaccharides 	10

Post

SCIENCE FUNDAMENTALS

B.Sc. Bioinformatics I sem

Introduction to Bioinformatics (BBI 102)

Unit -I: Introduction to Bioinformatics : Various definitions of bioinformatics, history of bioinformatics, applications of bioinformatics, scope of bioinformatics, bioinformatics in business. Introduction to central dogma of molecular biology.

Unit -II: Internet and Bioinformatics : General purpose search engine: Google, Biological search engine: Entrez, SRS. What is Database? Types of Databases Biological databases: Primary databases – GenBank, DDBJ, EMBL. Protein sequence databases – Swissprot, Uniprot, TrEMBL, PIR-PSD, PRINTS. Structural databases – PDB, NDB, PubChem, ChemBank, CCSD. Bibliographic databases: -Pubmed, PMC, PloS. citeXplore.

Unit -III: Biological data mining and Human Genome Project : Introduction: Fundamentals of data mining, Data Mining Functionalities, Classification of Data Mining systems, applications of data mining. The Human Genome Project, Bioinformatics and Human diseases.

Unit -IV: Problem Solving in Bioinformatics : Genomic analysis for DNA sequence, genomic analysis for protein sequence, strategy and options for similarity searches, structure prediction, illustration some problems and solution.

Unit -V: Introduction to advance fields of Bioinformatics : Genomics, Proteomics, Transcriptomics, Metabolomics, Metagenomics, Nutricogenomics, Protein engineering, Comparative Genomics, Pharmacogenomics, Pharmacogenetics, Rational Drug Designing, CADD.

Reference Books:-

1. Bioinformatics Concepts Skills and Application-S.C. Rastogi- PHI
2. Essentials of Bioinformatics-Jin Xion- Cambridge
3. Introduction to Bioinformatics- Attwood & Parry Smith- Pearson
4. Bioinformatics-CSV Murthy-Himalaya
5. Introduction to Bioinformatics- Arthur M. Lesk. - Oxford University
6. Bioinformatics Computing- Bergeron- PHI
7. Discovering Genomics Proteomics and Bioinformatics- Campbell, Heyer-Pearson
7. Data mining: Introductory and advanced-Margeret H. Dunham- IE publisher

Post

B.Sc. Bioinformatics I sem

Introduction to Bioinformatics (BBI 102)

Unit -I: Introduction to Bioinformatics: Definition of bioinformatics, history, applications and scope of bioinformatics, bioinformatics in business. Central dogma of molecular biology.

Unit -II: Internet and Bioinformatics: General purpose search engine, Biological search engine: Entrez, SRS. What is Database? Types of Databases Biological databases: Primary databases – GenBank, DDBJ, EMBL. Protein sequence databases – Swissprot, Uniprot, TrEMBL, PIR-PSD, PRINTS. Structural databases – PDB, NDB, PubChem, ChemBank, CCSD. Bibliographic databases:-Pubmed, PMC, PloS. citeXplore, Specialized databases.

Unit -III: Biological data mining and Human Genome Project : Introduction: Fundamentals of data mining, Data Mining Functionalities, Classification of Data Mining systems, applications of data mining. The Human Genome Project, Bioinformatics and Human diseases.

Unit -IV: Problem Solving in Bioinformatics: Genomic analysis for DNA sequence, genomic analysis for protein sequence, strategy and options for similarity searches, structure prediction, illustration some problems and solution

Unit -V: Introduction to advance fields of Bioinformatics: Genomics, Proteomics, Transcriptomics, Metabolomics, Metagenomics, Nutricogenomics, Protein engineering, Comparative Genomics, Pharmacogenomics, Pharmacogenetics, Rational Drug Designing, CADD.

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