



जम्मू केंद्रीय विश्वविद्यालय

Central University of Jammu

राया-सूचानी, बागला, जिला सांबा-181143 जम्मू; जम्मू एवं कश्मीर
Rahya- Suchani (Bagla), District Samba-181143, Jammu (J&K)

No. CUJ/Acad/II-15/11/2020/110

12th March, 2020

NOTIFICATION No. 21 /2020

Sub: Course Scheme and Syllabus for Interdisciplinary and Foundation Courses offered by Centre for Molecular Biology w.e.f. Academic Session 2019 -20 – Reg.

Ref: Notification No. 75/2018 dated 30.11.2018

It is hereby notified for the information of all concerned that on the recommendation of the Board of Studies of Centre for Molecular Biology and Dean, School of Life Sciences, the Academic Council has approved the following **Course Scheme** and **Syllabus** for Interdisciplinary and Foundation Courses offered by Centre for Molecular Biology w.e.f. Academic Session 2019-20. The approved course scheme and syllabus are as follows:

Course Code	Course Title	Credit	CIA	MSE	ESE	Max Marks
Interdisciplinary Courses						
PGMOL0I004T	Biomolecules	4	25	25	50	100
PGMOL0I005T	Introduction to Biochemistry	4	25	25	50	100
PGMOL0I006T	Experimental Techniques	4	25	25	50	100
Foundation Course						
PGMOL0F002T	Molecules of Life	2	12.5	12.5	25	50
PGMOL0F003T	Nanobiotechnology	2	12.5	12.5	25	50

- 0 represents semester code since these courses may be offered during all semesters.

[Signature]
Deputy Registrar
(Admin - HR)

Encl: Syllabus for Foundation Course and IDC

To:
Head, Centre for Molecular Biology

Copy to:
Controller of Examinations

Interdisciplinary Elective Course-I

Course Title: Biomolecules

Credits: 4

Course objective: The objective of this course is to augment the understanding of fundamental biomolecules among the students. This course will expose the students to elementary knowledge of basic and applied sciences.

Unit I: Cell Biology

- 1.1. Introduction to cell biology and cell architecture: Structure and function of prokaryotic and eukaryotic cells.
- 1.2. Structural organization and function of cell organelles; Plasma membrane; Cell wall; Cell-Cell Interactions; Cell division; Cell differentiation; Cell movement; Cell death.

Unit II: Nucleic acids

- 2.1. Discovery and importance of nucleic acids; DNA and RNA as the genetic material; Structure and composition of DNA and RNA; Different forms of DNA and RNA and their importance.
- 2.2. Structure and organization of bacterial and eukaryotic genomes. DNA Replication in prokaryotic and eukaryotes, DNA damage and repair.

Unit III: Proteins

- 3.1. General Introduction; structure, classification and biological function of amino acids; amino acids as ampholytes, zwitterion structure of amino acids, Isoelectric pH, Essential and non essential amino acids.
- 3.2. Classification of proteins; structural organisations of proteins-primary, secondary, tertiary and quaternary, Ramachandran plot, helical structure, beta structure; Tertiary structure-fibrous and globular structure, Quaternary structure of protein.

Unit IV: Carbohydrates

- 4.1. General properties and biological importance of carbohydrates; Types of carbohydrates; Monosaccharides- structure, properties, and classification with examples; Disaccharides: structure, properties, and classification with examples.
- 4.2. Polysaccharides: structure, properties, and classification with examples.

Unit V: Lipids

- 5.1. General introduction and biological importance of lipids; Fatty acids: definition, classification, structures and properties of fatty acids; Acid hydrolysis of triglycerides, unsaturation in acylglycerols and iodine number.
- 5.2. Structure and properties of phosphoglycerides, sphingolipids, glycosphingolipids, prostaglandins, waxes, lipoproteins.

Greta Dumbali JSE

Suggested reading

1. Cooper and Hausman; The Cell: A molecular approach; Sinauer Associates Press; 8th edition
2. Behlke MA, Berghof-Jäger K, Brown T, et al.; Polymerase Chain Reaction: Theory and Technology, 2019; Caister Academic Press.
3. Karp G, Iwasa J, and Marshall W; Karp's Cell Biology, 2018; Wiley-Blackwell Press.
4. Krebs JE, Goldstein ES, Kilpatrick ST; Lewin's Genes XII, 2017. Jones & Bartlett Learning.
5. Lodish H, Berk A, et al.; Molecular Cell Biology; WH Freeman Press; 8th edition.
6. T. A. Brown; Genome 3, 2007; Garland Science Press; 3rd Edition.
7. Campbell MA; Discovering genomics, proteomics and bioinformatics, 2006; Pearson Education Limited. 2nd Edition.
8. Green MR, Sambrook J; Molecular Cloning: A Laboratory Manual, 2012; Cold Spring Harbor Laboratory Press.
9. Bruce Alberts, J.D. Watson. Molecular Biology of the cell (2008) Garland publishing Inc., N.Y. 5th edition
10. David L Nelson, Michael M. Cox. Lehninger Principles of Biochemistry (2017). W H Freeman & Co; 7th edition.

Handwritten signatures:
@xch, Greta Jambhai, GPM, Jee, and a signature that appears to be "Ala - Jambhai".

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