STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI

Course Schedule: June - November 2024

Department : Botany
Name/s of the Faculty : Dr. H. Shakila and *Dr. Diana Vinodhini S
Course Title : Cell and Molecular Biology
Course Code : 19BT/MC/CM54
Shift : I

Week & No. of hours	Units & Topics	Teaching Methodology	Text & References	Method of Evaluation
Jun 19 – 26, 2024 (Day Order 1 - 6)	**Unit 1** **Introduction** 1.1Cell Theory: A brief study of the relationship of Cytology with other Biological sciences 1.2Cell Membrane: Chemical Composition, Molecular Organization, Molecular Models and Biogenesis ***Unit 2** **Nucleus** 2.1 Nucleus: Nuclear Membrane, Nucleolus, Nucleoplasm	Lecture, PPT and video presentations	Verma P.S and K.Agarwal . *Cell Biology, Genetics, Molecular Biology, Evolution and Ecology*. New Delhi: Chand, 2014	
Jun 27 – July 4, 2024 (Day Order 1 - 6)	1.3 Cell Organelles-Structure, Chemical Composition, Function and Biogenesis of the following: Endoplasmic Reticulum, Golgi Apparatus *2.2 DNA Structure-Chemistry of Double Helix	Lecture through chalk and blackboard	Verma P.S and K.Agarwal . *Cell Biology, Genetics, Molecular Biology, Evolution and Ecology*. New Delhi: Chand, 2014	
July 5 – 12, 2024 (Day Order 1 - 6)	1.3 Structure, Chemical Composition, Function and Biogenesis of Mitochondria, Chloroplast *2.2 DNA Structure–Types of DNA (A,B,Z)	Lecture, PPT and video presentations	Karp, G. 2012. *Cell and Molecular Biology*. John Wiley and sons, New York.	
July 15 – 23, 2024	1.3 Structure, Chemical Composition, Function	Lecture, PPT	Verma P.S and K.Agarwal . *Cell*	**Model building** –

(Day Order 1 - 6)	and Biogenesis of Peroxisomes and Glyoxsomes *2.2 Chargaff's rule, Tm value	and video presentations	*Biology, Genetics, Molecular Biology, Evolution and Ecology.* New Delhi: Chand, 2014	Various models of Organelles - Units 1.3, 2.1(Marks-20)
July 24 – 31, 2024 (Day Order 1 - 6)	**Unit 3** **DNA Replication** 3.1 Central dogma, DNA polymerases 3.2 Modes of DNA replication – Semiconservative, Conservative and Dispersive *2.2 Histones – Non histones	Lecture, PPT and video presentations	Roy, S.C and De, K. 1997. *Cell Biology*, New Central Book Agency (P) Ltd. Calcutta.	
Aug 1 – 5, 2024 (Day Order 1 - 3)	**REVISION**			
Aug 6 – 10, 2024	**C.A. Test – I**			

Aug 12 – 14, 2024 (Day Order 4-6)	3.3 DNA Replication – Initiation, Replication forks, Leading Strand and Lagging Strand Synthesis;	Lecture, PPT and video presentations	Karp, G. 2012. *Cell and Molecular Biology*. John Wiley and sons, New York.	
Aug 16 – 23, 2024 (Day Order 1-6)	3.3 Proteins involved in Replication 3.4 DNA Repair *2.3 Chromosomes - Structure and Chemistry	Lecture, PPT and video presentations	Satyanarayana U. 2010. *Biotechnology,* Books and Allied (P) Ltd. Kolkata.	
Aug 27 – Sep 3, 2024 (Day Order 1-6)	**Unit 4** **Transcription and Translation** 4.1 RNA Polymerase 4.2 Transcription of Prokaryotic Genes: Initiation, Elongation and Termination *2.3 Chromosomes - Molecular organization	Lecture through chalk and blackboard	Primrose, S. B. and Twyman, R. M. 2006. *Principles of Gene Manipulation and Genomics*.7th edition. Blackwell Publishing. Satyanarayana U. 2010. *Biotechnology,* Books and Allied (P) Ltd. Kolkata.	
Sep 4 – 11, 2024 (Day Order 1-6)	4.3 Molecular Structure of Three Classes of RNA (mRNA, rRNA, tRNA) 4.4 Genetic code, Ribosomes, Mechanism of prokaryotic translation – Initiation, Elongation and Termination *2.4 Cell Cycle	Lecture, PPT and video presentations	Satyanarayana U. 2010. *Biotechnology,* Books and Allied (P) Ltd. Kolkata.	**Presentation-** Units-4.3 & 5.4 (Marks-20)
Sep 12 - 20, 2024 (Day Order 1- 6)	**Unit 5 Gene Regulation** 5.1 Prokaryotic Regulation: Operon Concept – lac operon and trp operon 5.2 Epigenetics and DNA methylation *2.4 Mitosis & Meiosis	Lecture, PPT and video presentations	Verma P.S and K.Agarwal . *Cell Biology, Genetics, Molecular Biology, Evolution and Ecology.* New Delhi: Chand, 2014.	**QUIZ** – Unit 2.1 & 2.2 (Marks-10)
Sep 23 - 26, 2024 (Day Order 1-4)	Revision			

Sep 27 – Oct 3, 2024	**C.A. Test – II**			
Oct 7 - 15, 2024 (Day Order 1 to 6)	5.3 Eukaryotic Regulation: Genetic Imprinting	Lecture, PPT and video presentations	Karp, G. 2012. *Cell and Molecular Biology*. John Wiley and sons, New York.	
Oct 16 - 22, 2024 (Day Order 1 to 6)	5.4 Model plant in research: Arabidopsis thaliana	Lecture, PPT and video presentations	Verma P.S and K.Agarwal . *Cell Biology, Genetics, Molecular Biology, Evolution and Ecology.* New Delhi: Chand, 2014.	
Oct 23 - 24, 2024 (Day Order 1 to 2)	**REVISION**			