

Semester	AUG 2022
Open to semester	1
Course code	BI1113
Course title	Introductory Biology - I
Credits	3 /
Course Coordinator & participating faculty (if any)	Nagaraj Balasubramanian*, Girish Ratnaparkhi
Nature of Course	Lectures and Tutorials
Pre-requisites	None
Objectives (goals, type of students for whom useful, outcome etc)	The course is an introduction to the Biology of cells. The course is open to all students with or without a background in Biology.
Course contents (details of topics /sections with no. of lectures for each)	<p>Module 1: Introduction to biology</p> <p>1.1 What is Life? Importance of biology and evolution (2 +1TA)</p> <p>1.2 Logical structure of biology: complexity, emergent properties, adaptation, diversity (1)</p> <p>1.3 Nature of experimentation in biology and statistical inference (1+1TA)</p> <p>Module 2: Biochemistry</p> <p>3.1 Water (1)</p> <p>3.2 Interrelationships between biomolecules that collectively carry out essential cell functions - Carbohydrates, Lipids, Nucleic acids, Proteins, Enzymes (2)</p> <p>Module 3: Genetics and Molecular Biology</p> <p>2.1 Biological information in cells, nucleus and chromatin architecture (2)</p> <p>3.4 Cell cycle, mitosis and meiosis (3)</p> <p>2.2 Genetics, genes, alleles, Mendel's laws (3)</p> <p>2.3 Central dogma of molecular biology, DNA replication, transcription and translation (3)</p> <p>Module 4: Cell Biology</p> <p>3.1 Cell theory, prokaryotes & eukaryotes, unicellular, multicellular organisms (3)</p> <p>3.1.1 Introduction to imaging.(1)</p>

	<p>3.2 Cell structure and compartmentalization: Cell wall, cell membrane (lipid bilayer), cytoskeleton, actin, microtubules, microfilaments and motor proteins (3)</p> <p>3.3 Endomembrane system, ER, Golgi complex, endosomes, lysosomes and nucleus (3)</p>
<p>Evaluation /assessment</p>	<p>End-Sem Examination-50%</p> <p>Mid-Sem Examination-50%</p> <p>Others-Quizzes will be part of the continuous assessment %</p>
<p>Suggested readings (with full list of authors, publisher, year, edn etc.)</p>	<p>1) Voet, D., Voet, J.G (2010). Biochemistry, 4th edition, Wiley</p> <p>2) Harper's Illustrated Biochemistry (2009), 28th edition, McGraw Hill.</p> <p>3) Campbell and Reece (2005) Biology, 7th edition, Pearson Publishing.</p> <p>4) Raven, Johnson, Losos and Singer (2005) Biology, 7th edition, McGraw Hill.</p> <p>5) Alberts, Bray, Hopkin, Johnson, Lewis, Raff, Roberts and Walters (2003), Essential cell biology, 2nd edition, Garland.</p> <p>6) Bruce Alberts, Alexander Johnson, Julian Lewis, Martin Raff, Keith; Roberts, Peter Walter. (2007). 7) Molecular Biology of the Cell. 5th Edition. Bruce Alberts, Alexander Johnson, Julian Lewis, Martin Raff, Keith Roberts, Peter Walter (2005)</p>