

The following lecture schedule contains links to the book sections from [Biology](#) from OpenStax College ([CC-BY 4.0](#)) Readings are organized into 4 units that cover the material for the 4 exams in the course.

[Unit 1](#)

[Unit 2](#)

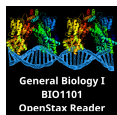
[Unit 3](#)

[Unit 4](#)

<b>Week</b>	<b>Lectures</b>	<b>Topic with link to Openstax pages</b>	<b>Openlab Supplement</b>
I	1.	<b>BASICS</b> Introduction to the Course Definition, Characteristics and Hierarchy of Life Scope of Ecology: Habitat, Population, Community, Ecosystem The Scientific Method Evolution and Classification Systematics, taxonomy, phylogeny	<a href="#">Biology Basics</a>
	2.	<b>THE ORIGIN &amp; EVOLUTION OF LIFE</b> Darwin & Evolution The Origin of Life The Geological Time Scale Cellular History Kingdoms and Domains	<a href="#">Evolution and Geological Time</a>
II	3.	<b>INORGANIC CHEMISTRY I</b> Definition, Classification and Properties of Matter Atomic Structure The periodic Table Isotopes Electrons and Energy Energy Chemical Reactions: Exergonic and endergonic Activation Energy Oxidation and Reduction	<a href="#">Chemistry</a>
	4.	<b>INORGANIC CHEMISTRY II</b> Elements, Compounds, Molecules and Mixtures Bonds: Weak and Strong	
III	5.	<b>WATER &amp; pH</b> Importance and Properties of H <sub>2</sub> O Acids, Bases, pH, Buffers	<a href="#">Water</a>



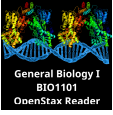
	6.	<b>ORGANIC CHEMISTRY</b> Importance of Carbon Organic vs. Inorganic Compounds The Hydrocarbons Functional Groups Isomers	Organic Chemistry
IV	7.	<b><u>Examination I</u></b> (Lectures 1-6 inclusive)	
	8.	<b><u>MACROMOLECULES I</u></b> Monomers and Polymers Dehydration Synthesis and Hydrolysis Carbohydrates Lipids	Macromolecules I
V	9.	<b><u>MACROMOLECULES II</u></b> Proteins Nucleic Acids ATP Enzymes and Metabolic Pathways	Macromolecules II
	10.	<b><u>CELLS</u></b> The Cell Theory Methods of Studying Cells Cellular Size Limitations Cell Composition Prokaryotic and Eukaryotic Cells Cellular Evolution Anaerobic and Aerobic Cells; Endosymbiosis; Multicellularity; Viruses, Bacteria and Archaea	Cells
VI	11.	<b><u>THE EUKARYOTIC CELL</u></b> Eukaryotic Cell Structure and Function	Eukaryotes
	12.	<b><u>MEMBRANES &amp; TRANSPORT</u></b> Membrane Structure and Function Passive Transport Processes Active Transport Processes Cell Surface Modifications	Membranes
VII	13.	<b><u>Examination II</u></b> (Lectures 8-12 inclusive)	



	14.	<b>ENERGY</b> Cells and the Flow of Energy Metabolic Reactions and Energy Transformations Metabolic Pathways Oxidation and Reduction	Energy
VIII	15.	<b>CELLULAR RESPIRATION I</b> Cellular Respiration (Anaerobic) Outside the Mitochondria: Glycolysis Fermentation	Glycolysis and Fermentation
	16.	<b>CELLULAR RESPIRATION II</b> Cellular Respiration (Aerobic) Inside the Mitochondria: The Preparatory Reaction (Hub) Citric Acid Cycle (TCA) Electron Transport Chain (ETC) Metabolic Pool	Aerobic Respiration
IX	17.	<b>PHOTOSYNTHESIS I</b> Photosynthetic Organisms The Process of Photosynthesis Plant as Solar Energy Converters: Light Reactions	Light Capture
	18.	<b>PHOTOSYNTHESIS II</b> Dark Reactions: Calvin Cycle Reactions (Carbon Fixation) Other Types of Photosynthesis	Carbon Fixation
X	19.	<b>ASEXUAL REPRODUCTION</b> The Cell Cycle and Its Control Mitosis and Cytokinesis The Cell Cycle and Cancer Prokaryotic Cell Division	Cell Cycle
	20.	<b>SEXUAL REPRODUCTION</b> Halving the Chromosome Number Genetic Variation The Phases of Meiosis Comparison of Meiosis and Mitosis The Human Life Cycle (Spermatogenesis & Oogenesis)	Meiosis and Gametogenesis
XI	21.	<b>CHROMOSOMES</b> Changes in Chromosome Number and Structure	Chromosomes



XII	22.	<b>Examination III</b> (Lectures 14-21 inclusive)	
	23.	<b>GENETICS I</b> Gregor Mendel Mendel's Law Human Genetics Disorders	Mendelian Genetics
	24.	<b>GENETICS II</b> Extending the Range of Mendelian Genetics Multiple Allelic Traits Incomplete Dominance Pleiotropy Polygenic Inheritance X-Linked Inheritance Environmental Influences	Non-Mendelian Genetics
XIII	25.	<b>DNA</b> The Genetic Material DNA Structure DNA Replication Prokaryotic versus Eukaryotic Replication	DNA
	26.	<b>GENE FUNCTION</b> The Genetic Code Transcription Translation Structure of the Eukaryotic Chromosome	Gene structure and function
XIV	27.	<b>GENETIC REGULATION</b> Prokaryotic Eukaryotic Regulation Through Mutations	Gene Regulation
	28.	<b>BIOTECHNOLOGY &amp; GENOMICS</b> DNA Cloning Biotechnology Products Gene Therapy Genomics	Biotechnology and Genomics



- XV      29.      ANIMAL DEVELOPMENT  
Early Developmental Stages  
Developmental Processes  
Human Embryonic and Fetal Development
30.      **Examination IV** (Lectures 23-29 inclusive)