



BRAINIACS OLYMPIAD

BIOLOGY SYLLABUS



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BIOLOGY SYLLABUS (GRADES 7–8)

1. INTRODUCTION TO BIOLOGY

- Characteristics of living organisms.
- Levels of organization (cells, tissues, organs, systems).
- The scientific method and its application in biology.

2. CELL BIOLOGY

- Structure and function of plant and animal cells.
- Differences between prokaryotic and eukaryotic cells.
- The role of the cell membrane, cytoplasm, nucleus, and mitochondria.

3. HUMAN ANATOMY (BASICS)

- Overview of major human body systems (digestive, respiratory, circulatory, and excretory).
- Functions of key organs such as the heart, lungs, stomach, and kidneys.

4. PLANT BIOLOGY

- Structure and function of roots, stems, leaves, and flowers.
- Photosynthesis and its importance.
- Basic plant reproduction (pollination, fertilization, seed formation).

5. ECOLOGY (INTRODUCTION)

- Ecosystems: Producers, consumers, and decomposers.
- Food chains and food webs.
- Basic environmental factors (light, temperature, water).



This is the end of the syllabus for Grades 7–8
Get ready to explore the World of the Brainiacs!
All examinations questions will be based on the materials listed above.

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BIOLOGY SYLLABUS (GRADES 9–10)

1. GENETICS (BASICS)

- DNA structure and its role in heredity.
- Introduction to chromosomes and genes.
- Mendel's experiments and principles of inheritance.

2. HUMAN PHYSIOLOGY

- Detailed study of the digestive system, respiratory system, and circulatory system.
- Blood composition and its functions.
- Introduction to the nervous system and sensory organs.

3. MICROBIOLOGY

- Characteristics of microorganisms (bacteria, viruses, fungi).
- Beneficial and harmful roles of microorganisms in daily life.
- Basic hygiene and disease prevention.

4. PLANT PHYSIOLOGY

- Transport of water and nutrients in plants.
- Role of xylem and phloem.
- Factors affecting transpiration.

5. ECOLOGY AND ENVIRONMENT

- Energy flow in ecosystems.
- o Population dynamics (birth rate, death rate, carrying capacity).
- o Environmental conservation and biodiversity.



This is the end of the syllabus for Grades 9–10
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BIOLOGY SYLLABUS (GRADES 11–12)

1. ADVANCED GENETICS

- Structure and replication of DNA.
- Gene expression and protein synthesis.
- Mutations: Types and consequences.

2. HUMAN ANATOMY AND PHYSIOLOGY (ADVANCED)

- Endocrine system: Glands and hormones.
- Immune system: Basic mechanisms of defense.
- Reproductive system and stages of human development.

3. BIOCHEMISTRY

- Introduction to macromolecules (carbohydrates, proteins, lipids, and nucleic acids).
- Enzymes: Structure, function, and factors affecting activity.
- Metabolism: Cellular respiration and photosynthesis.

4. BIOTECHNOLOGY (BASICS)

- Definition and applications of biotechnology.
- Examples: Genetically modified organisms, cloning, and stem cells.

5. ENVIRONMENTAL SCIENCE

- Impact of human activities on ecosystems.
- Climate change and sustainable development.
- Conservation strategies for protecting biodiversity.

6. RESEARCH METHODS

- Designing simple experiments.
- Analyzing and interpreting data.
- Writing basic scientific reports.



This is the end of the syllabus for Grades 11-12
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