

BIOLOGY SYLLABUS FOR MEDICAL STUDENTS

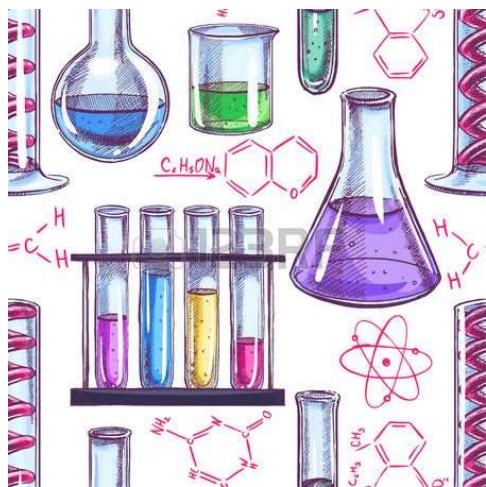
1. Structural organization of the human organism. Tissues - structure and functions of epithelial, connective, muscle and nervous tissue.
2. Human locomotor system. Bones and joints - structure, types, functions and health knowledge.
3. Human locomotor system. Muscles - structure, types, functions and health knowledge.
4. Internal fluid environment of the human organism. Blood, blood groups, blood clotting, blood transfusion, health knowledge.
5. Human cardiovascular system. Heart, cardiac activity, blood vessels, circulation and health knowledge.
6. Human respiratory system - structure, functions and health knowledge.
7. Human digestive system - structure, functions and health knowledge.
8. Human excretory system - structure, functions and health knowledge.
9. Male reproductive system - structure, functions and health knowledge.
10. Female reproductive system - structure, functions and health knowledge.
11. Embryonic and post embryonic human development. Health knowledge of human reproduction and development.
12. Human nervous system. Spinal cord - structure, functions and and health knowledge.
13. Human endocrine system. Types of endocrine glands - structure, functions and health knowledge.
14. Vision and hearing analyzer - structure, functions and health knowledge.
15. Human skin - structure, functions and and health knowledge.
16. Nucleic acids. DNA - structure, functions, replication, application of DNA analysis in medicine.
17. Nucleic acids. RNA - types, structure, functions, transcription.
18. Proteins - structure, functions, translation.
19. Enzymes - structure, mechanism of enzyme action, regulation of enzyme activity, application of enzymes in medical and biological practice.
20. Viruses and bacteria as infectious agents - structure, distribution and medical importance as causes of human diseases.
21. Eukaryotic cell - structural and functional characteristic. Plasma membrane - structure, transport of substances through the plasma membrane, endocytosis and exocytosis.
22. Eukaryotic cell - cytoplasmic organelles (types, structure and function).
23. Eukaryotic cell - role and structure of nucleus.
24. Cell life cycle. Cell division. Mitosis and meiosis – phases and biological significance. Chromosomes and human karyotype.
25. Inheritance of traits - general characteristics, monohybrid, dihybrid and analytical cross.
26. Variability - mutational variability (classification of mutations: gene, chromosomal and genomic mutations).
27. Human genetics - methods of genetic analysis.
28. Hereditary diseases in humans.
29. Human reproduction – gametogenesis (spermatogenesis and oogenesis) and fertilization.
30. Homeostasis - types, immunological mechanisms of homeostasis, immunity, cell-mediated and humoral immune response.

Biology textbooks:

Campbell Biology, Authors: Lisa A. Urry, Jane Reece, Peter V. Minorsky, Michael L. Cain, Steven A. Wasserman, Publisher: Pearson (all editions)

https://biology.org.ua/files/lib/Raven_Johnson_McGraw-Hill_Biology.pdf

<http://dept.clcillinois.edu/biodv/PrinciplesOfBiology.pdf>



CHEMISTRY SYLABUS FOR MEDICAL STUDENTS

I. INORGANIC CHEMISTRY

1. STRUCTURE OF THE ATOM.
2. CHEMICAL BOND.
3. REDOX PROCESSES.
4. ELECTROLYSIS.
5. OXIDES - BASIC, ACID AND AMPHOTERIC OXIDES.
6. HYDROXIDES AND OXOACIDS.
7. SALTS.
8. COMPLEX COMPOUNDS.
9. RATES OF CHEMICAL REACTIONS.
10. CATALYSIS.

11. CHEMICAL EQUILIBRIUM.
12. SOLUTIONS.
13. COLLOID-DISPERSED SYSTEMS.
14. THEORY OF ELECTROLYTIC DISSOCIATION.
15. ACIDS, BASES AND SALTS.

II. ORGANIC CHEMISTRY

16. THEORY OF THE STRUCTURE OF CHEMICAL COMPOUNDS. STRUCTURAL THEORY.
17. HYDROCARBONS. ALKANES, ALKENES, ALKYNES.
18. ARENES.
19. HALOGEN DERIVATIVES OF HYDROCARBONS.
20. HYDROXYL DERIVATIVES OF HYDROCARBONS. ALCOHOLS AND PHENOLS.
21. AMINES.
22. CARBONYL DERIVATIVES OF HYDROCARBONS. ALDEHYDES AND KETONES.
23. CARBOXYLIC ACIDS.
24. FUNCTIONAL DERIVATIVES OF CARBOXYLIC ACIDS - ACID HALIDES, ANHYDRIDES, ESTERS AND AMIDES.
25. AMINOCARBOXYLIC ACIDS.
26. CARBOHYDRATES.

Chemistry textbooks:

General Chemistry books: Oxtoby, Raymond Chang, **Petrucci** or **Zumdahl (all editions)**

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<https://web.ung.edu/media/Chemistry2/Chemistry-LR.pdf>