

THE SCHEDULE OF TUTORIALS - "**GENETICS**" COURSE
FOR FIRST-YEAR STUDENTS OF PHARMACY

No.	Topic	Date
1.	Structure and function of nucleic acids. Gene expression in prokaryotes and eukaryotes, regulation of gene functions.	07.10.2026
2.	Human karyotype.	14.10.2026
3.	Single-gene inheritance in humans. Blood groups.	21.10.2026
4.	Variability and mutations. Chromosome aberration syndromes.	28.10.2026
5.	Genetic counseling.	04.11.2026

Compulsory literature:

1. Lynn B. Jorde, John C. Carey, Michael J. Bamshad. Medical Genetics. Elsevier Health Sciences, 2016

Additional literature:

1. McLennan A., Bates A., Turner P., White M. Instant Notes in Molecular Biology, Taylor & Francis Ltd., 2012

Tutorial No. 1

Topic: STRUCTURE AND FUNCTION OF NUCLEIC ACIDS. GENE EXPRESSION IN PRO- AND EUKARYOTES, REGULATION OF GENE FUNCTIONS.

1. Rules for observing occupational health and safety during tutorials.
2. Sources of scientific information.
3. Chemical composition of nucleic acids.
4. Model of DNA structure according to Watson and Crick.
5. Structure and chemical composition of chromatin.
6. DNA replication in Prokaryotes and Eukaryotes.
7. Genetic code.
8. Transcription mechanisms and post-transcriptional processes in Pro- and Eukaryota cells.
9. Mechanisms and stages of protein biosynthesis.
10. Regulation of gene expression in Prokaryotes.
11. Mechanisms of regulation of gene expression in Eukaryota.

"Medical Genetics" Chapter 2

Tutorial No. 2

Topic: HUMAN KARYOTYPE.

1. Definition of karyotype and karyogram.
2. Chromosomes in Prokaryotes and Eukaryotes.
3. Chromosome testing methods.
4. Cytogenetic nomenclature of chromosomes and rules for recording karyotypes.
5. Genomic imprinting and the formation and significance of uniparental disomy.

6. Disease syndromes caused by autosome anomalies.
7. Definition and criteria of gender.
8. Sex chromosomes.
9. Barr body.
10. Staining of oral epithelial cells for the presence of Barr bodies.
11. Lyon Theory.

“Medical genetics” Chapter 5 pp. 73-84; Chapter 6 pp. 97-124

Tutorial No. 3

Topic: SINGLE GENE INHERITANCE IN HUMANS. BLOOD TYPES.

1. Criteria for inheritance of autosomal and X-linked monogenic traits (dominant and recessive).
2. Normal and pathological monogenic traits inherited in an autosomal dominant and recessive manner, as well as markers linked to the X chromosome.
3. Antigens and antibodies of the ABO system.
4. The Bombay phenomenon.
5. Rh group system. Serological conflict in the Rh system.

“Medical genetics” Chapter 3 pp. 36-37, Chapter 4 pp. 55-74, Chapter 5 pp. 84-95

Tutorial No. 4

Topic: VARIABILITY AND MUTATIONS. CHROMOSOMAL ABERRATIONS SYNDROME.

1. Division of genetic variability.
2. Types of mutations.
3. Mutagenic factors.
4. Disease syndromes caused by changes in the number of heterochromosomes.
5. DNA repair mechanisms.
6. Diseases associated with DNA repair disorders.

“Medical genetics” Chapter 3 pp. 25-36, Chapter 4 pp. 58-71, Chapter 6 pp. 102-124

Tutorial No. 5

Topic: GENETIC COUNSELING.

1. Phenotypic diagnosis and initial diagnosis.
2. Construction and analysis of a pedigree.

“Medical genetics” Chapter 13 pp. 249-265, Chapter 15 pp. 283-294