

## Syllabus

**Subject: Medical Biology**

**Field of study:** General Medicine

**Degree of study:** III

**Study programme:** Anatomy, histology and embryology

**Form of study:** Internal / External

**Subject evaluation:** oral exam

**Subject type:** compulsory optional

**Department:** Department of Medical Biology UPJŠ FM

### Lectures and seminar

#### **Biomacromolecules**

- the fundamental components of biological macromolecules
- common characteristics, the structure and function of saccharides, lipids, proteins and nucleic acids

#### **Cell structure**

- prokaryotic and eukaryotic cells
- cell organelles, their structure and functions
- general characteristic of biomembranes, movement of molecules through the membrane

#### **The structural organization of genome**

- organization of DNA in genomes - fine structure of chromosomes
- chromosomal morphology and human karyotype
- the basic principles of human cytogenetics

#### **Genomics and medicine**

##### **Cell cycle**

- phases, control of cell cycle
- mitosis, meiosis
- cell signalling

##### **Basic concepts of molecular biology**

- replication of genetic information
- gene structure and function
- gene expression and regulation of gene expression

##### **Mutations, gene polymorphisms**

- gene mutations
- structural and numerical chromosome mutations

##### **Genetics of cancer**

- the clonal growth of cancer cells
- genes in carcinogenesis
- epigenetic changes and cancer

##### **Cell differentiation, cell aging and cell death**