Subject:	**MEDICAL CHEMISTRY**		
Field of study:	*General medicine*	**Degree of study:**	*III.*
Study programme:	*Clinical Biochemistry*	**Form of study:**	*Internal / External*
Subject evaluation:	*Exam*	**Subject type:**	*Elective course*

Department: **Department of Medical and Clinical Biochemistry UPJŠ FM**

Lectures and seminars

Chemistry of colloidal systems
- General properties of colloidal state
- Colloidal solutions
- Dialysis, ultracentrifugation
- Sedimentation in centrifugation field
- Electrokinetic phenomena

Bioenergetics and kinetics of biological processes
- Transformations of energy in organism
- The fate of ATP in organism
- Equilibrium and non-equilibrium thermodynamics of biological systems
- Kinetics of denaturation and renaturation of proteins
- Catalysis of enzymatic reactions

Semipermeable membranes in living systems
- General phenomena associated with membrane permeability
- Diffusion. Donnan‘s equilibrium
- Transfer of mass and information across a biological membrane

Coordination compounds
- Properties of metals forming coordination compounds
- Bonding in coordination compounds
- Coordination compounds in living systems
- Possibilities of usage of coordination compounds (e.g. in therapy)

Organic and bioorganic compounds and their significance in medicine I
- Biochemical importance of aldehydes and compounds containing keto- group
- Toxicological and pharmacological significance of amines
- Carbonic acid derivatives in relation to physiological effects

Organic and bioorganic compounds and their significance in medicine II
- The importance of saccharides in the recognition of transported substances
- The role of lipids in inflammatory processes
- Unstructured proteins and membrane proteins
- Protein and prion aggregation

Toxic substances
- Toxicological properties of chemical elements and compounds
- Entry and excretion of toxic substances into and out of the body
- Mechanism of action of toxic substances in the body
- Chemistry of selected drugs
- Free radicals and antioxidants