PROGRAMME OF THE SUBJECT
„MEDICAL BIOCHEMISTRY“

STUDY BRANCH: „DENTISTRY“
2ND YEAR – MEDICAL FACULTY UK

LECTURES
Summer semester

1st week: 18.02 – 22.02. 2019
Metabolism of nucleotides – synthesis of purine and pyrimidine nucleotides. Regulation of nucleotide synthesis Degradation of nucleotides

2nd week: 25.02. – 01.03. 2019
Transfer of genetic information – replication of DNA, synthesis of RNAs, proteosynthesis.

3rd week: 04.03. – 08.03. 2019
Meaning and mechanisms of regulation biochemical processes in the organism. Regulation of metabolic processes at the level of the cell and at the level of the organism.

4th week: 11.03. – 15.03. 2019
Mechanisms of transfer of chemical signals into the cells. Types of receptors, cytosolic, membrane receptors. G-proteins and their role

5th week: 18.03. – 22.03. 2019
Principles of regulations by endocrine system. Hormones of pancreas.

6th week: 25.03. – 29.03. 2019
Hormones of adrenal cortex – glucocorticoids, mineralocorticoids. – metabolic roles and regulation of their secretion.

7th week: 01.04. – 05.04. 2019

8th week: 08.04. – 12.04. 2019
Biochemical basis of nervous system functions. Vegetative nervous system and role in integration of organ functions.

9th week: 15.04. – 19.04. 2019
Biochemistry of connective tissue. Protein and carbohydrate component of connective tissue. Synthesis of collagen.

10th week: 22.04. – 26.05. 2019
Biochemistry of hard tissues – bones and teeth. Mineralization and factors which influence these processes.

11th week: 29.04. – 03.05. 2019
Biochemistry of parodontopathies.

12th week: 06.05. – 10.05. 2019
Relation of several diseases of organism and hypovitaminosis with pathologic situations in mouth cavity – diabetes, osteoporosis.
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STUDY BRANCH: „DENTISTRY“

2ND YEAR – MEDICAL FACULTY UK

SEMINARS AND PRACTICAL EXERCISES

Summer semester

1st week: 18.02 – 22.02. 2019
Role of vitamins as the essential components of the food in metabolic processes. Defects of metabolism and functions in vitamins deficiencies.
Practical part: Determination of methymalonic acid in urine

2nd week: 25.02. – 01.03. 2019
Defects in purine nucleotides metabolism - hyperuricaemia (gout).
Practical part: Determination of uric acid in blood serum and in urine

3rd week: 04.03. – 08.03. 2019
Regulation of gene expression in procaryots and eucaryts.
Mechanism of proteosynthesis

4th week: 12.03. – 15.03. 2019
Gastrointestinal system and digestion. Basis of chemical mechanisms of digestion of individual foodstuffs, mechanism of secretion of HCL and its regulation in stomach.
Examination of basal and stimulated secretion of HCL, preparation of the patient and evaluation of the test.
Practical part: Examination of gastric secretion under basal conditions and after stimulation

5th week: 18.03. – 22.03. 2019
Metabolism of iron. Absorption of iron, trasport of iron, regulation of iron metabolism.
Practical part: Determination of iron in blood, absorption curve of iron

6th week: 25.03. – 29.03. 2019
Mechanisms of the transfer of chemical signals into the cells. Vegetative nervous system - neurotransmitters, receptors and mechanisms of the action.
Classification of receptors at the terminals of vegetative nervous system, Physiological actions of sympathetic and parasympathetic nervous systems at the molecular level.

7th week: 01.04. – 05.04. 2019
Metabolism of water and minerals. Water - functions in the organism, regulation of water balance, Defects - dehydration, hyperhydration. Na⁺, K⁺, Cl⁻ - meaning in the organism, regulation, mineralocorticoids, defects.
Practical part: Concentration and dilution and acidification tests

8th week: 08.04. – 12.04. 2019
Meaning of calcium and phosphate in the organism. Regulation of calcium level – parathyroid hormone, vitamin D, calcitonine
Practical part: Determination of calcium concentration of blood

9th week: 15.04. – 19.04. 2019

10th week: 22.04. – 26.05. 2019
Disorders of blood plasma proteins, changes in amounts and spectrum of blood plasma proteins in several diseases.
Practical part: Determination of total proteins and albumin in blood plasma

11th week: 29.04. – 03.05. 2019
Functional biochemistry of the liver. Synthesis and degradation of tetrapyrrols, metabolism of bilirubin
Practical part: Determination of bilirubin in serum

12th week: 06.05. – 10.05. 2019
Blood plasma enzymes and meaning in medicine. Factors affecting enzyme activities in blood plasma. Application of determination of enzyme activities in blood plasma in myocardial attack and in damage of organs.
Practical part: Changes of enzyme activities in blood plasma in myocardial damage.