

## **Notification for students**

### **Medical Biochemistry**

#### **Members of Department:**

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Medical Biochemistry course is organized in 25 weeks of teaching and starts 5 weeks after beginning of a academic year, following the Chemistry course. The total hours of Medical Biochemistry course is organized as 3 hours of lectures, and 3 hours of laboratory classes per week.

The course aims to provide an understanding of the core principles and topics of Medical Biochemistry, and to enable students to acquire a specialised knowledge and understanding of selected aspects of pathobiochemical processes. Medical biochemistry course includes following general principles set in particular contexts: Chemical and biological foundations of biochemistry, Structure and catalysis, Bioenergetics and metabolism, Tissue metabolism, Information pathways, Cell cycle, Signaling and Cancer. In addition, the course aims to provide the students with analytical and presentational skills. This will be achieved via seminars and laboratory classes. The student will actively participate in oral presentation of contemporary biochemical topics during seminars, as well as, in performance of different methods through practical exercises, which are conceptually based on clinical biochemistry practice.

#### **Assessment and evaluation of students**

The assessment of students takes into account the Chemistry mark and Medical Biochemistry pre-exam activities score, success in the practical exam, as well as, the final test (all points are recorded in personal student chart and the electronic database).

**Medical Chemistry mark** accounts for **10% of the final grade** and carries up to 10 points.

**Medical Biochemistry mark** accounts for **90% of the final grade** and carries up to 90 points.

**FINAL GRADE IN MEDICAL BIOCHEMISTRY AND CHEMISTRY = MEDICAL CHEMISTRY POINTS x 0,1 + MEDICAL BIOCHEMISTRY POINTS x 0,9**

#### **Medical Biochemistry mark:**

**1.Pre-exam activities:** During the course, continuous evaluation of students' knowledge and activity is performed through five short mini-essays (Mini-essays are assigned throughout the year (two in the first and three in the second semester). The student must write the essence and most important concept for the provided question in 300 letters. The maximum number of

points that can be earned on one essay is 2 points. Therefore, the total number of points through 5 essays is 10 points. However, it is not obligatory to pass the essays.

**First essay covers following topics:** Structure-function relationship in proteins; Enzymes as catalysts; Regulation of enzymes. **Second essay covers:** Cellular bioenergetics; Tricarboxylic acid cycle; Oxidative phosphorylation and mitochondrial function; Generation of ATP from glucose: glycolysis; Oxidation of fatty acids and ketone bodies; Digestion, absorption and transport of carbohydrates; Formation and degradation of glycogen; Pathways of sugar metabolism: pentose phosphate pathway, fructose and galactose metabolism; Synthesis of glycosides, lactose, glycoproteins and glycolipids; Gluconeogenesis; **3rd essay covers following topics:** Digestion and transport of dietary lipids; Synthesis of fatty acids, triacylglycerols and the major membrane lipids. Cholesterol absorption, synthesis, metabolism and fate; Integration of carbohydrate and lipid metabolism; **4<sup>th</sup> essay covers:** Cell signaling; Structure of the nucleic acids; Synthesis of DNA; Transcription: synthesis of RNA; Translation: synthesis of proteins; Regulation of gene expression; and **5<sup>th</sup> essay covers :** Basic concepts in the regulation of fuel metabolism by insulin, glucagon and other hormones; Protein digestion and amino acid absorption; Fate of amino acid nitrogen: Urea cycle; Purine and pyrimidine metabolism; Inter tissue relationship in the metabolism of amino acids; Actions of hormones that regulate fuel metabolism.

\*The pre-exam activities points are added to a final score after passing the final test, so they may increase the final grade, but cannot help for passing the test itself.

**2. Practical exam** in form of the written test carries 20 points (it accounts for **20% of the Medical Biochemistry grade**). In order to pass, students must earn at least 11.

**3. Final exam** represents a form of written final test that carries and **accounts for 60% of the final grade. The threshold for passing the final test is 26 points out of 50.**

### **Practical exercises**

For practical classes, each student needs bring a white coat, an A4 notepad, a pencil, wooden paint pencils, and a calculator. If the student does not have the appropriate equipment, their presence will be marked as \*not attended\*. For the practical classes, students must have printed the practical worksheet, which the professor will provide to their email addresses.