

Title:	<b>BIOCHEMISTRY</b>
Lecture hours:	10 h- lectures, 20 h – laboratory classes
Study period: (summer/winter)	Winter semester
Numbers of credits:	6
Assessment methods:	Lecture – Exam (multiple choice test) Labs – test and quizzes (multiple choice and written tasks), lab reports
Language of instruction:	English
Prerequisites:	English, at least B1 level Basic courses of chemistry
Course content:	<p><u>Lectures:</u></p> <ol style="list-style-type: none"> <li>1. Thermodynamics of biochemical reactions.</li> <li>2. Catabolism of carbohydrates and mechanisms of energy production – glycolysis, the cytric acid cycle, oxidative phosphorylation.</li> <li>3. Catabolism of lipids – lipolysis, <math>\beta</math>-oxydation of fatty acids.</li> <li>4. Catabolism of proteins and amino acids – proteolysis, urea cycle.</li> <li>5. Production of metabolic intermediates and reduced nucleotides -pentose phosphate pathway.</li> <li>6. Synthesis of glucose and glycogen - gluconeogenesis.</li> <li>7. Synthesis of fatty acids, TAG, phospholipids and cholestrol.</li> <li>8. Integration of methabolism.</li> </ol> <p><u>Laboratories:</u></p> <ol style="list-style-type: none"> <li>1. Structure and function of amino acids – structure, characteristic reactions, isoelectric point.</li> <li>2. Techniques of protein determination and purification.</li> <li>3. Properties of the enzymes. Factors affecting the rate of the enzymatic reaction. Determination of optimum pH and the activity of acid phosphatase.</li> <li>4. Structure and properties of carbohydrates. Characteristic reactions.</li> <li>5. Structure and functions of lipids. Determination of the saponification number.</li> </ol>
Learning outcomes:	<p><u>By the end of this course students:</u></p> <ol style="list-style-type: none"> <li>1) They will have been exposed to theoretical fundaments of methabolic pathways.</li> <li>2) They will have been exposed to theoretical fundaments of structure and functions of basic biochemical compounds.</li> </ol>

	<p>3) They will be able to apply the theory in practice.</p> <p>4) They will have performed laboratory work.</p> <p>5) They will have written laboratory reports and analysis summaries.</p> <p>6) They will be able to draw relevant conclusions from lab tests.</p>
Name of lecturers:	<p>Lecture: Joanna Moraczewska, Ph.D., D.Sc., Professor</p> <p>Laboratory: Małgorzata Śliwinska Ph.D.</p>
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Literature:	<p>1. Principles and Techniques of Biochemistry and Molecular Biology, Wilson K., Walker J. eds. , Sixth Edition, Cambridge University Press; 2005</p> <p>2. Berg J.M., Tymoczko J.L, Stryer L. Biochemistry. Sixth edition, W.H. Freeman &amp; Co.; 2007.</p> <p><a href="http://bcs.whfreeman.com/biochem6/default.asp">http://bcs.whfreeman.com/biochem6/default.asp</a></p>