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| **Course**   |  **BIOCHEMISTRY**   |
| Type   | Semester  | ECTS  | Code  |
| OBLIGATIVE (O)   | 3  | 4  | 130BK200  |
| **Lecturer**  | Valon DURGUTI, PHD  |
| **Assistent**  |   |
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| **Aims and Objectives**  | Course content: Biochemistry is the application of chemistry to the study of biological processes at the cellular and molecular level.The knowledge and methods developed by biochemists are applied to in all fields of medicine, in agriculture and in many chemical and health-related industries. Biochemistry is also unique in providing teaching and research in both protein structure/function and genetic engineering, the two basic components of the rapidly expanding field of biotechnology.  Objectives The course aims to provide students with a basic understanding of:   * the chemical nature of biological macromolecules, their three-dimensional construction, and the principles of molecular recognition;
* the principles of bioenergetics and enzyme catalysis;
* the metabolism of dietary and endogenous carbohydrate, lipid, and protein;
* the principles and major mechanisms of metabolic control and of molecular signalling by hormones;
* the control of cell proliferation; how the DNA in a genome is organized, replicated, and repaired; and how genetic information in the DNA is selectively expressed as functional proteins
* basic laboratory techniques related to the qualitative and quantitative analyzes of the main organic compounds

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| **Learning Outcomes**  |  Upon successful completion of the curse students will:  * Demonstrate an understanding of fundamental biochemical principles.
* Acquire proficiency in laboratory techniques in biochemistry and apply the scientific method to the processes of experimentation and hypothesis testing.
* Apply molecular and cell-based techniques in delineating the cells functional processes in research and industrial settings.
* Apply and effectively communicate scientific reasoning and data analysis in both written and oral forums.
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| **Course Content**  | **Course Plan**  | **Week**  |
| Syllabus Treatment, Introduction to Biochemistry  | 1  |
| Carbohydrates (Introduction)  | 2  |
| Metabolism of Carbohydrates   | 3  |
| Lipids (Introduction)   | 4  |
| Metabolism of Lipids   | 5  |
| Amino acids and Proteins (Introduction)   | 6  |
| Problem-based learning (Determination of Students Tasks)  | 7  |
| Metabolism of Amino acids and Proteins   | 8  |
| Enzymes   | 9  |
| Vitamins   | 10  |
| Hormones   | 11  |
| Nucleic Acids  | 12  |
| Water and Minerals   | 13  |
| Presentation and Evaluation of Student Tasks   | 14  |
| **Final Exam**  | 15  |
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| **Literature/References**  |  1. Dermaku.S. (2015): *Biokimia,* Nr. 02-117/109.
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4. Judih. V, Charlotte. P & Donald. V. (1999): *Fundamentals of Biochemistry*, ISBN: 978-0471417590.
5. Devlin, T. (1997), *Textbook of biochemistry with Clinical Correlations*, 4th ed. John Wiley & Sons inc. pub.New York;
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8. Xekova-Stojkova, S. (1999) *Biohemija*. Medicinski fakultet, Skopje.
9. Stojkovski, V. (1994) *Biohemiski metodi*. Elnat, Kumanovo.
10. K.Simpson. B. (2012): *Food Biochemistry and Food Processing*, Second Edition, ISBN: 978-0-8138-0874-1.
11. Boyer.R.F. (2012): *Biochemistry Laboratory*, Second Edition, ISBN: 978-0-13-604302-7.
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13. Yildiz.F. (2010): *Advances in Food Biochemistry*, ISBN: 978-0-8493-7499-9.
14. Durguti, Valon and Hajrizi, Flora, "*Determination of Vitamin D in Patients Diagnosed with COVID – 19"* (2021). *UBT International Conference*. 196. https://knowledgecenter.ubt-uni.net/conference/2021UBTIC/all-events/196
15. Shkoza. A. (2009):  *Fiziologjia e Njeriut*, Botimi II, ISBN: 978-99956-19-32-9, Ufo Press
16. Osmani.A.R. (1993): *Biokimia e Mjekësisë*, Universiteti i Prishtinës.

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