Epigenetics

SYLLABUS

Topic of the course	**Epigenetics**
Institution where the course will take place	Institute of Bioorganic Chemistry of the Polish Academy of Sciences, Poznań
Language	English
Learning objectives	PhD student will: 1. Learn first signs and development of concept of epigenetics 2. Acquire a high-level knowledge in the field of molecular biology, chemical biology, genetics, and epigenetics. 3. Learn about methods and experimental techniques in biochemical, genetic and epigenetic studies. 4. After series of lectures PhD student will be able to (i) analyze and describe epigenetic mechanisms, (ii) resolve problems in regulation of gene expression with epigenetics mechanism, (iii) predict key direction of epigenetic changes on the basis of the structure–function relationship (SAR), (iv) to read scientific literature from different field.
Learning outcomes, according to Attachment 2 to the Programme of the Study (valid from October 1st 2026)	P8S_WG (pkt. 1, 2, 4), P8S_UW (pkt. 1, 2), P8S_UK (pkt. 1)
Type of the course	**Facultative**
Semester/Year	Summer semestr 2026/27
Name of the lecturer	**Prof. dr hab. Jan Barciszewski**
Name of the examiner	**Prof. dr hab. Jan Barciszewski**
Teaching methods	Lectures with ppt presentations and discussions.
Attendance requirements	Fluent English is required, especially in the field of molecular and chemical biology.
Number of ECTS points	**2 ECTS**

Number of lectures	**12 hours**
Didactic methods	Lectures, ppt presentations, discussions.
Methods of verification and assessment of learning outcomes	**Oral exam**
Conditions of a positive evaluation	Passing grade from the exam.
Course content	Lectures will cover biological, chemical and physico-chemical basis of epigenetics. Several issues will be discussed as mechanisms of biochemical reactions, structure - function relationship in proteins and nucleic acids field, kinetics and energetics of biochemical reactions and stereochemistry in biology.
Literature of the course materials	1. "Chemical Biology of Nucleic Acids: Fundamentals and Clinical Applications", Springer-Verlag Berlin Heidelberg (Eds. V.A. Erdmann, Wojciech T. Markiewicz, Jan Barciszewski), 2014. 2. "Systems Biology", Springer-Verlag Berlin Heidelberg (Eds. N. Rajewsky, S. Jurga, J. Barciszewski), 2018 3. "The DNA, RNA, and Histone Methylomes", Springer-Verlag Berlin Heidelberg, (Eds. S. Jurga, J. Barciszewski), 2019 4. „Epitranscriptomics" Springer-Verlag Berlin Heidelberg, (Eds. S. Jurga, J. Barciszewski), 2021