

## **Plant Biochemistry**

1. Lecturer: Avksentyeva Olha Oleksandrivna, associate professor of the department of plant and microorganism physiology and biochemistry.
2. Status: optional for bachelors.
3. Course, semester: 4th academic year, 8th semester.
4. Number of credits – 4, general academic hours – 108, including lectures – 51, seminars – 17, self-study – 40.
5. Preliminary requirements: basics of Bioorganic Chemistry, Biochemistry, Microbiology, Plant Physiology and Biochemistry, Biotechnology
6. Description of the course: this course "Plant Biochemistry" provides up-to-date plant biochemistry. Within the course there are considered a variety of biochemical compounds that are structural components of plant metabolome. Current understanding of metabolic systems that determine the physiological functions of these organisms are presented. Also there are considered connections between primary (general) and secondary (specialized) metabolism of plants. The course provides new information about applied aspects of modern biochemistry of plants for use in genetic engineering technologies, agriculture, food, pharmaceutical, cosmetics industry and biotechnology industry.

Sections: Introduction. Carbohydrates. Proteins, amino acids, peptides and lipids. Substances of plant secondary metabolism. Applied aspects of modern plant biochemistry.

### Knowledge and skills:

- Knowledge of general characteristics, classification and properties of major classes of plant substances
  - Primary plant metabolism: carbohydrates, lipids, nitrogenous compounds, organic acids
  - Understanding the general pathways of biosynthesis and decomposition of these substances
  - Knowledge of classification, characteristics, role and practical significance of the plant secondary substances
  - Ability to apply theoretical knowledge of plant biochemistry into scientific research and under conditions of production activities
  - To accomplish the search of educational, scientific literature and online resources
  - To prepare abstracts, reports, presentations etc;
  - To perform a scientific discussion on seminars.
7. Course organization: lectures and seminars. Forms of control: tests and a final exam.
  8. Language: Ukrainian.
  9. Educational and methodological support: program, schedule of classes, topics of seminars, educational and scientific literature, multimedia presentations, methodical complex, guidelines for laboratory practice.

### Studentbooks:

1. *Krasilnikova L.A., Avksentyeva O.A., Zhmurko V.V.* Plant Biochemistry. – Kharkiv: V.N. Karazin National University, 2011. – 200 p.
2. *Filipstsova G.G., Smolich I.I.* Basics of Plant Biochemistry. – Publish Centre of Belarusian State University, 2004. – 136 p.
3. *Heldt H.W.* Plant Biochemistry (Russian Edition) – Moscow: BINOM, 2011. – 471 p.
4. *Bowsher C., Sterr M.W., Tobin A.K.* Plant Biochemistry. – Garland Science, 2008. – 446 p.
5. *Gleason F., Chollet R.* Plant biochemistry. – Jones & Bartlett Publishers, 2011. – 248 p.