Table 5.2 Course specification

Type and level of studies:Bachelor Academic Studies

Course name: Biochemistry of Food and Nutrition

Course status:elective

Number of ECTS credits:6

Requirement: none

Course aim

To provide students with the systematic knowledge about biologically valuable constituents of food, their absorption,metabolic transformations, importance for organism, effects of inadequate intake, and transformations during processingand storage. To introduce student to principles of rational diet, and trends in field of nutrition and food safety. To provideskills in application of standard experimental methods in food quality and safety testing.

Course outcome

After completing the course, student is able to (1) demonstrate knowledge of the main nutrient groups, their sources, absorption, metabolism, physiological role, effects of insufficient and excessive intake, (2) show understanding of effects of non-nutrients, contaminants, additives and changes during processing and storage on food safety, sensory properties and nutrition value, (3) demonstrate systematic knowledge of rational nutrition principles, specific needs and possible diet related disorders of people of different age, health and habits, (4) independently estimates nutritional status, energy and nutrient needs of a person, (5) independently conduct food quality and safety analysis and evaluate the obtained results.

Course content

Theory

Nutrients in human diet. Dietary proteins, digestion and absorption, essential amino acids, biological value, functional properties of selected proteins. Dietary lipids, digestion and absorption, physiological role, essential fatty acids, rancidity. Dietary carbohydrates, digestion and absorption, dietary fibers. Minerals, water- and fat-soluble vitamins – sources, function, absorption, effects of insufficient and excessive intake. Chemical changes during food processing and storage, fermentation, spoilage. Food sensory properties. Food energy, energy requirements. Principles of rational nutrition –dietary guidelines for general population and specific groups. Trends – functional food, dietary supplements, probiotics and prebiotics, organic food, GMO. Malnutrition – obesity, undernourishment. Food toxicology – antropogenic and natural contaminants in food. Food additives – role, safety. Food quality and safety – legislation.

Practice:

Quality and composition analysis of selected foods. Determination of fat (gravimetric method by Soxhlet) and moisture (gravimetric) in flour, noodles expansion during cooking, pH of cookies, proving soy flour in wheat flour. Determination of milk acidity (volumetric). Proving artificial colors in ground paprika. Proving starch in meat products, determination of nitrites in meat products. Determination of rancidity – peroxide number (volumetris). Determination of salt in pickles (volumetric). Determination of preservatives (HPLC) and vitamin C (spectrophotometric in dophenol method) in beverages. Methanol determination in brandy (headspace GC-MS). Sensory evaluation of bread.

Literature

1. Yildiz F (2010): Advances in food biochemistry, CRC Press, Taylor & Francis group, Boca Raton, USA.
2. deMan JM (1999): Principles of food chemistry, Aspen Publishers, Inc., Maryland, USA

Number of classes of active teaching				Other classes
Lectures: 3 (45)	Practice: 2 (30)	OFT:	SRW:	

Teaching methods

Lectures, laboratory work, consulting, e-learning (OER and remote lab exercises), seminar

Assessment of knowledge (maximum of 100 points)

Pre-exam obligations	**Points**	**Final exam**	**points**
activity during lecture classes	**5**	written exam	*70*
practical teaching	**10**		
seminars	**15**		