

Tárgytematika / Course Description Food physics

N_DMA54

Tárgyfelelős neve /

Teacher's name: dr. Dóka Ottó

Félév / Semester: 2024/25/2

Beszámolási forma /

Assesment: Vizsga

Tárgy heti óraszám /

Teaching hours(week): 0/0/0

Tárgy féléves óraszám /

Teaching hours(sem.): 30/0/0

OKTATÁS CÉLJA / AIM OF THE COURSE

The aim of the course in food physics is to introduce students to the physical properties of foodstuffs and methods of measuring them. The course will become students familiar with the physical methods used in food testing; recognize the mechanical, thermal, electrical, optical, colour and rheological characteristics of foods and food raw materials; as well as, learn their measurement methods. They should also be able to use the physical properties of food and food raw materials in quality control procedures.

TANTÁRGY TARTALMA / DESCRIPTION

Physical and mechanical characteristics of food products and food raw materials.

Measuring methods of physical and mechanical characteristics used in foods and food raw materials.

Optical characterization of foods: reflection, absorption, and emissions.

Colour measurements and colour measuring systems.

Determination of colour characteristics in foods.

Optical spectroscopy.

Infrared and NIR spectroscopy.

Thermal properties: parameters of thermal conductivity (thermal conductivity, thermal diffusivity, thermal effusivity, etc.).

Measuring methods and techniques of thermal properties in foods.

Electromagnetic properties of foods: impedance spectra of foods, electrical permittivity, and electrical conductivity.

Rheology and rheological models.

Rheological properties of foods.

SZÁMONKÉRÉSI ÉS ÉRTÉKELÉSI RENDSZERE / ASSESSMENT'S METHOD

Meeting the conditions set by the supervisor.

KÖTELEZŐ IRODALOM / OBLIGATORY MATERIAL

Rahman, M. S. (2005): Mechanical properties of foods. In: Food Engineering. Encyclopedia of Life

Support Systems. Barbosa-Canovas, G. V. ed. UNESCO Publishing, Paris. p. 87-104.

Sitkei Gy. (1981): A mezőgazdasági anyagok mechanikája. Akadémiai Kiadó. Budapest.

Lukács Gy. (1982): Színmérés. Műszaki Könyvkiadó. Budapest

N.N. Mohsenin (1984): Electromagnetic radiation properties of foods and agricultural products. Gordon and Breach Science. New York,

J.F. Steffe (1992): Rheological methods in food process engineering. Freeman Press. East Lansing.

Ábrahám Gy. (szerk.) (1998): Optika. Panem Kft. Budapest.

L.O. Figura, A. A. Teixeira (2007): Food Physics. Springer. Berlin-Heidelberg.

AJÁNLOTT IRODALOM / RECOMMENDED MATERIAL