

COURSE TITLE:

FOOD ANALYSIS

COURSE DESCRIPTION:

The objective of the Food Analysis laboratory practices is to introduce students to the basic Analytical chemistry methods used in Food Analysis (i.e., titrimetry with instrumental end point indication, UV-Vis spectrophotometry, thin layer/liquid/ion chromatography) for food sensory evaluation, determination of major (i.e., Krebs cycle acids, alcohol, carbohydrates, unsaturated fatty acids) and minor food (i.e., trace elements, halides, food preservatives) components in basic foodstuffs and commodities such as: egg, eggshell, milk, bread, vegetal oils, curing salt as well as hedonic products such as chocolate, wine, candies, chewing gum, fruit juices.

Weekly schedule:

1. Safety and fire instructions in the laboratory.
2. Food Sensory Evaluation: distinguishing between the four basic tastes. Distinguishing between different concentrations of a given basic taste. Hedonic test for Túró Rudi (sweet consisting of Hungarian cottage cheese dipped into chocolate). Descriptive sensory evaluation of red wine flavors.
3. Determination of acid content of hard candies by potentiometric titration. Determination of acid content of fruit juices. Determination of citric acid in chewing gum by acid-base titration.
4. Wine analysis: Total titratable acidity of white wine by conductometry. Qualitative determination of non-volatile acids by TLC. Determination of free and total sulfurous acid content of wine. Determination of alcohol content of wine by chromatometry.
5. Determination of Ca in eggshell and milk by complexometry.
6. Determination of the chloride content of bread according to Volhard's method. Determination of chloride content of salted margarine according to Mohr's method and by potentiometry.
7. Determination of nitrite in cured salt by permanganometry.
8. Spectrophotometric determination of iron content of multivitamin tablets.
9. Determination of the sugar content in chocolate by Luff-Schoorl-Regenbogen's method. Qualitative determination of carbohydrates in grape juices and grapes by TLC.
10. Determination of iodine value in fats and oils according to Winkler's method.
11. Repetition of missed tasks. Closing inventory.
12. Examination by written test.

LITERATURE:

Harry T. Lawless, Hildegard Heymann: Sensory evaluation of food, Principles and practices. Chapman and Hall, 1998

Alexandra Oliveira (SFOS University of Alaska) – Sensory evaluation of foods (Lecture, 2011)

www.cem.msu.edu/~cem333/Week11.pdf

memo.cgu.edu.tw/hsiu-po/.../Lecture%207.pdf

Miklós Orbán: Analytical Chemistry Lecture slides for BSc students: <http://www.chem.elte.hu/departments/anal/bsc/> (Last accessed: 17/02/2013)

André de Villiers, Phillipus Alberts, Andreas G.J. Tredoux, Hélène H. Nieuwoudt. Analytical techniques for wine analysis: An African perspective; a review. *Analytica Chimica Acta* 730 (2012) 2–23

P. R Haddad, M. Sterns, J Wardlaw, Analysis of wine an undergraduate project, pdf file.

http://www.fpharm.uniba.sk/fileadmin/user_upload/english/Fyzika/Determination_of_the_specific_conductance.pdf

<http://www.nt.ntnu.no/users/floban/KJ%20%202051/Conductometry.pdf>

<http://www.tau.ac.il/~chemlaba/Files/conductometry-titrations.pdf>

<http://www.outreach.canterbury.ac.nz/chemistry/documents/calcium.pdf>

http://www.outreach.canterbury.ac.nz/chemistry/documents/magnesium_calcium.pdf

Sindelar, Jeffrey; Andrew Milkowski (March 2012). "Human safety controversies surrounding nitrate and nitrite in the diet". *Nitric Oxide*. doi:10.1016/j.niox.2012.03.011

http://www2.bren.ucsb.edu/~keller/courses/esm223/Spectrometer_analysis.pdf

www.postech.ac.kr/class/ls302/exp3_ex8.html

<http://amrita.vlab.co.in/?sub=3&brch=63&sim=1111&cnt=1>

TEACHER:

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