



Department of Pharmaceutical and Toxicological Chemistry
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SYLLABUS

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FACULTY OF PHARMACY

Approved

by the Council meeting of Faculty of
Pharmacy,
Minutes No. 4 of 13.06.2016

Dean of Faculty of Pharmacy,
Associate professor,

N. Ciobanu Nicolae Ciobanu

Approved

by the meeting of Department
of Pharmaceutical and Toxicological
Chemistry,
Minutes No. 10 of 11.05.2016

Head of Department, professor

V. Valica Vladimir Valica

SYLLABUS

DISCIPLINE SANITARY CHEMISTRY

Name of the course: **SANITARY CHEMISTRY**

Code of the course: **S08A082**

Type of course: **Optional**

Total number of hours – 51,

including lectures – 17 hours, seminar – 34 hours

Number of credits provided for the course – 2

Lecturers teaching the course:

- PhD in Pharmaceutical Sciences, Associate Professor **Tamara Cotelea**

**I. Aim of the discipline:**

The investigation of the environmental are dictated by the necessity, to improve their quality in the conditions when the degradation of the environment continues it occurred after the development of the human's and it has a negative impact on the quality of the food resources and of the human's health.

II. Objectives obtained in teaching the discipline:

– this important to know that quality of food used by people, to be sure they will be good for their health;

– to know the normal chemical composition of the natural product or if it is processed, to know the modification that appeared during its route from the producer to the consumer, as well as the findings of the unknown substances originated or through adding unhealthy compounds;

– the research of the environmental factors and the improvement of their quality in case they have a negative impact on food products and on human's health;

– the investigation to prevent the water, air, and soil pollution with harmful compounds.

III. Basic content of the course:**A. Lectures:**

<i>Semester VIII</i>		
No	Contents	Hours
1.	Introduction in Sanitary chemistry. The subject and its problems. The sanitary chemistry's particularities. Main directions of application. Regularities of penetration, distribution of the toxic chemicals in the human's body. Pharmacokinetic and pharmacodynamic processes. Water - environmental element.	2
2.	Atmospheric air – an environmental element. Chemical composition of the air. The influence of the polluted air on human's body organism. The pollution of the air. The classification of the atmospheric air pollutants. Physical, chemical, biological, microbiological, sound of the air pollution. Pollutants with allergic action. Factors that cause the result of the polluted substances on the human's body.	2
3.	The Soil's structure. Physical characteristic of the soil. The chemical composition of the soil. The soil pollution. Chemical indicators of soil pollution Direct and indirect indicators.	2
4.	Food and nourishment – generalization. Inadequate contribution of nutritive principles. Balanced nutrition - general principles. Nutritional needs of the body. Food maturation. Digestive utilization coefficient of nutrients; coefficient of restraint. Food maturation. Biochemical processes occurring in fruits and vegetables after the harvest. The influence of the culinary process on nutritive products.	2
5.	Microbial food alteration. Water activity. Microbial proteins glucides and fat alteration. Sugar caramelization. Evolution and prevention of the enzymatic and unenzymatic browning.	2
6.	Food preservation. Keeping food. Method of preservation. Preserving the food product at high and low temperature. Lyophilization - a method of preserving food products. Chemical, salting and smoking food preservation.	2
7.	The presence of toxic substances in animal and vegetal products. Antinutritive substances. Enzyme inhibitors. Toxic aminoacids. Favism. Erucic acid.	2
8.	Food additives. Hygiene nutritional aspects. Classification. Legislation. Preservatives. Colorants. Sweeteners. Flavourants. Food born illnesses.	1



Total

17

B. Practice lessons:**Pharmaceutical Chemistry – I***Semester V*

No	Contents	Hours
1.	The particularities of the sanitary chemistry. Regularities of penetration, distribution of toxic chemicals in the human body organism. Pharmacokinetic and pharmacodynamic processes. Toxicokinetic parameters. Water – environmental elements.	10
2.	Atmospheric air-environmental element. Chemical composition of the air. The influence of atmospheric air on human organism. The pollution of the air. The classification of the atmospheric air pollutants. Physical, chemical, biological, microbiological, sound of the air pollution. Pollutants with allergic action. Factors that cause the result of the polluted substances on the human body.	4
3.	The structure of the soil. Physical characteristic of the soil. The chemical composition of the soil. The soil pollution. Chemical indicators of soil pollution. Direct and indirect indicators.	2
4.	Food and nourishment – generalization. Inadequate contribution of nutritive principles. Balanced nutrition - general principles. Nutritional needs of the body. Food maturation. Digestive utilization coefficient of nutrients; coefficient of restraint. Food maturation. Biochemical processes occurring in fruits and vegetables after the harvest. The influences of the culinary process on nutritive products.	6
5.	Microbial food alteration. Water activity. Microbial proteins, glucides and fat alteration. Sugar caramelization. Evolution and prevention of the enzymatic and unenzymatic browning.	2
6.	Food preservation. Methods of preservation. Food storage. Methods of preservation. Preserving the food product at high and low temperature. Lyophilization - a method of preserving food products. Chemical, salting and smoking food preservation.	2
7.	The presence of toxic substances in animal and vegetal products. Antinutritive substances. Enzyme inhibitors. Toxic amino acids. Favism. Erucic acid.	2
8.	Food pollution. Hygienic aspects of food safety. Natural substances, with cancer action. Hypertensive heterosides. Goitrogen compounds. Protein hemagglutinin. Avitamins. Alkaloids. Substances with estrogenic activity.	2
9.	Food additives. Nutritional aspects. Definition. Classification. Legislation. Preservatives. Antioxidants. Substances. Colorants. Sweeteners. Flavoring. Food quality. Classification of food. Nutritional aspects. Sensory properties. Hygienic properties and innocuity. Aspects of food-legislative. Foodborne illness.	4
Total		34

IV. Recommended literature:**A. Compulsory:**

1. Banu C. – *Aditivi și ingrediente pentru industria alimentară*, Editura Tehnic, București, 2000.
2. Cuciureanu R. – *Elemente de Igiena Alimentației*, Editura Junimea, Iași, 2005.



3. Mincu I., Mogoș T. V. – *Bazele practice ale nutriției omului bolnav*, Editura R.A.I. - Imprimeria Coresi, București, 1993.
4. Mogoș T. V. – *Alimentația în bolile de nutriție și metabolism*, vol. I – II, Editura Didactică și Pedagogică, R.A., București, 1997-1998.
5. Mogoș V. T. – *Sănătatea și substanțele minerale*, Editura Albatros, București, 1991.
6. Mogoș V. T. – *Vitamino-mineralo-terapia*, Editura Militară, București, 1992.

B. Additional:

1. Adrian J., Potus J., Poiffait A., Dauvillier P. – *Analisis nutricional de los alimentos*, Editorial Acribia, S.A., Zaragoza (España), 2000.
2. Alpert D.H., Stenson W., F., Bier D.M. – *Manual of Nutritional Therapeutics*, Fourth Edition, Lippincott Williams & Wilkins, 2001.
3. Basdevant A., Laville M., Lerebours E. *Traite de nutrition clinique de l' adulte*, Medecine-Science, Flammarion, 2002.
4. Cheftel J. Cl., Cheftel H. – *Introduction a la biochimie et a la technologie des aliments*, vol. I, ed 2-e, Edition Tec. Et Doc – Entreprise moderne d'edition, Paris, 1992.
5. Cuciureanu R., Morariu I. – *Chimia mediului și alimentului. Metode de analiză*, Editura Performantica Iași, 2009.
6. Fennema O.R (Editor) – *Food Chemistry*, Third Edition, Marcel Dekker, Inc. New York, Basel, Hong Kong, 1996.
7. Gârban Z. – *Nutriția umană*, vol. I, Editura Didactică și Pedagogică, R. A., București, 2000.
8. Gutiérrez J. B. – *Ciencia bromatológica. Principios generales de los alimentos*, Diaz de Santos, 2000.
9. Kathleen L., Mahan M.S. - *Krause's Food Nutrition and Diet Therapy*, Saunders, 2004.
10. Madrid V.A., Maddrid C.J. – *Los aditivos en los alimentos (Según la Unión Europea y la Legislación Española)*, 1ª Edición, AMV Ediciones, Mundi Prensa, 2000.
11. Multon J. L. – *Additifs et auxiliares technologiques*, Tec & Doc Lavoisier Apria, Paris, 1992.
12. Steinhart E.C., Doyle M. E., Cochrane A. B. – *Food Safety*, Marcel Dekker, Inc., New York. Basel. Hong Kong, 1995.

V. Teaching and learning methods:

Course, practical work.

VI. Suggestions for individual work:

Reading of additional literature, individual consultations, thematic reports, thematic conferences.

VII. Methods of assessment:

Current: checking along the way

Final: colloquium.

Absence on colloquium without good reason is recorded as „absent” and is equivalent to 0 (zero). The student has the right to re-take the on colloquium twice.

VIII. Language of instruction:

Romanian.