



AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Laboratory Techniques and Safety							
Course Code		LBT113		Course Level		Short Cycle (Associate's Degree)			
ECTS Credit	3	Workload	75 (Hours)	Theory	1	Practice	1	Laboratory	0
Objectives of the Course		It has been proved statistically that a very low rate of accidents occurring in laboratories and production areas originate from technical errors and 85% from human errors. Lack of information about the substance being studied or not being shown the necessary attention and wrong habits play an important role in the accident. The other side, laboratories have great importance in chemistryIt is extremely important for students to be trained in laboratory work and techniques without starting laboratory work. The protection of the community and the environment is directly related to the individual behavior, knowledge and skills of the staff working in the laboratory. Our aim is to educate our students to learn about chemicals, hazards, safety precautions and protection methods and to inform them about working in a safe environment with less errors in their work and daily life and to have knowledge about the laboratory techniques to use in the field of chemistry.							
Course Content		Basic principles and practices in ensuring a safe working environment, Classification of chemicals used in laboratories, Labeling, storage and usage information, Labeling, material safety data (MSDSs), Safety equipment: personal protective equipment, Storage and disposal of waste chemistries chemicals that should not be in contact with each other, Laboratory accidents and first aid emergency medical operations: selection, preparation, use of first aid / necessary tools, equipment, materials, equipment and protective equipment, introduction, functions, cleaning of glassware, Establishment of basic laboratory procedures and devices, Execution and termination of reactions and purification techniques, Separation techniques and chromatographic introduction							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Demonstration, Discussion, Individual Study					
Name of Lecturer(s)									

Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	40
Final Examination	1	60

Recommended or Required Reading

1	Prof Dr. Mahmure Üstün Özgür, Kimyasallar ve Tehlikeleri Dersi Ders Notları, İş Sağlığı ve Güvenliği Bölümü, Meslek Yüksek Okulu, YTÜ, 2004-2005
2	Laboratuvar Güvenliği, Prof. Dr. Handan Ak Çelik, 2004
3	Prof. Dr. Lale ZOR, 17. ve 19. Ünite, Ders Notları, AÖF, Anadolu Üniversitesi, 2004
4	Dr. Kemal Akın ve Dr. Salih Cesur, Laboratuvar Güvenliği Ders Notları, Ankara Üniversitesi, 2004
5	Yrd.Doç.Dr. Memduh Sami TANER Akdeniz Üniversitesi Eğitim Fakültesi Kimya Eğitimi Anabilim Dalı
6	Toxic and Hazardous, Industrial Chemicals Safety Manual, The International Technical Information Institute, 1978
7	Mayo, D. W., Pike, R. M. and Trumper, P. K., "Microscale Organic Laboratory", John Wiley and Sons, Inc., New York, 1994
8	Mohrig, J. R., Hammond, C. N., Morrill, T. C. and Neckers, D. C., Experimental Organic Chemistry, W. H. Freeman and Company, New York, 1999
9	Lehman, J. W., Operational Organic Chemistry, 3rd ed., Prentice Hall, New Jersey, 1999
10	Leonard, J., Lygo, B. and Procter, G., "Advanced Practical Organic Chemistry", 2nd ed., Nelson Thornes, Cheltenham, 2001
11	Erdik, E., Obalı, M., Yüksekışık, N., Öktemer, A., Pekel, T. ve İhsanoğlu, E., "Denel Organik Kimya", 4. baskı, A.Ü. Fen Fakültesi, Ankara, 2001
12	Nüket Öcal ve Feray Aydoğan, Organik Laboratuvar Teknikleri, YTU, 2004.

Week	Weekly Detailed Course Contents	
1	Theoretical	Safety and proper use of laboratory in chemistry laboratory. Measures to be taken while working with hazardous chemicals in terms of laboratory safety and human health
	Practice	Taking precautions such as working under fire extinguishers, gowns, hobs, work plans and observations
	Preparation Work	Supply of visual materials
2	Theoretical	Classification of chemicals, labeling, storage and usage information
	Practice	Inspection of label images, observation of certain properties of chemicals
	Preparation Work	Supply of visual materials, Import tag samples into class



3	Theoretical	Labeling, material safety data (MSDSs), information and training
	Practice	Examination of codes and sample chemicals
	Preparation Work	Supply of visual materials
4	Theoretical	Safety equipment: Personal protective equipment, laboratory safety equipment
	Practice	Examination of safety equipment
	Preparation Work	Supply of visual materials
5	Theoretical	Laboratory Accidents and First Aid
	Practice	Examination of accident samples and making first aid samples
	Preparation Work	Supply of visual materials
6	Theoretical	Storage and disposal of waste chemicals
	Practice	Inspection of waste companies of storage materials
	Preparation Work	Supply of visual materials. Reading the annotation notes
7	Theoretical	Introduction, functions, cleaning of glass materials
	Practice	Demonstration and inspection of some glass materials and visuals
	Preparation Work	Supply of visual materials
8	Intermediate Exam	Mid-term exam
9	Theoretical	The planning of an experiment, the establishment and implementation of the devices, the points to be noted during the purification of the product,
	Practice	Examination of plan preparation examples, demonstration of product purification processes
	Preparation Work	Supply of visual materials
10	Theoretical	Establishment of basic laboratory procedures and devices
	Practice	Preparation and examination of some devices
	Preparation Work	Supply of visual materials
11	Theoretical	Execution and termination of reactions and purification techniques
	Practice	Examination of visual reaction samples and realization of some reactions
	Preparation Work	Supply of visual materials
12	Theoretical	Execution and termination of reactions and purification techniques
	Practice	Examination of visual reaction samples and realization of some reactions
	Preparation Work	Supply of visual materials
13	Theoretical	Working under inert atmosphere, working with inert gases, storage and purification of liquids, and considerations for safety
	Practice	Melting and melting point determination, boiling and boiling point determination, freezing and freezing point determination
	Preparation Work	Supply of visual materials
14	Theoretical	Separation techniques and Introduction to Chromatography
	Practice	Examination of some chromatographic analysis methods
	Preparation Work	Supply of visual materials
15	Theoretical	Separation techniques and Introduction to Chromatography
	Practice	Examination of some chromatographic analysis methods
	Preparation Work	Supply of visual materials
16	Final Exam	Final Exam

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	0	1	14
Lecture - Practice	14	0	1	14
Individual Work	14	2	0	28
Midterm Examination	1	5	2	7
Final Examination	1	10	2	12
Total Workload (Hours)				75
[Total Workload (Hours) / 25*] = ECTS				3

*25 hour workload is accepted as 1 ECTS

Learning Outcomes

1	Students will be informed at the end of the semester on issues of chemistry, hazards, safety precautions and emergency aid. Thus, students will work more consciously and securely in home and business life.
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2	Students will learn the necessity of laboratory training, the main rules to be followed and what to do in an emergency
3	Students will have information about planning an experiment, realizing it, and purifying the product.
4	To have knowledge about laboratory accidents and first aid methods
5	Ability to work effectively in multidisciplinary teams individually and have the confidence to take responsibility

Programme Outcomes (Fruit and Vegetables Processing Technology)

1	To be able to understand social, cultural and social responsibilities and to have the ability to follow national and international contemporary
2	In line with the principles and reforms of Atatürk; Adopting the national, moral, spiritual and cultural values ??of the Turkish Nation, open to universal and contemporary developments, the Turkish language is a rich, rooted and productive language; love and awareness of language; to have the ability to use the foreign language sufficiently and with the habit of reading and professionally.
3	To know the basic hardware units and operating systems of computer, internet to be able to prepare documents, spreadsheets and presentations on the computer by using office programs
4	Gains the theoretical and practical knowledge at the basic level in mathematics, science and professional fields
5	Recognize and analyze the problems with the knowledge of fruit and vegetable technology in the field, interpret the data and propose solutions.
6	According to the prepared work plan and program in laboratories, it can carry out the necessary works to obtain the desired quality product.
7	To have professional and ethical responsibility in business life.
8	It is open to development and change, follows scientific social and cultural innovations and constantly improves itself.

Contribution of Learning Outcomes to Programme Outcomes 1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High

	L1	L2	L3
P1	3	3	3
P2	3	3	3
P3	2	2	2
P4	3	3	3
P5	3	3	3
P6	5	5	5
P7	3	3	3
P8	3	3	3

