

COURSE SYLLABUS

Vocational School

Course Code	Course Title	Credits (T-P-L)	ECTS
ISG 212	Chemicals and Hazards	3-0-3	8
Prerequisites	None		
Language of Instruction	Turkish	Mode of Delivery	Face to face
Course Type and Level	Compulsory / 1st Year / Fall Semester		
Instructor	Class Hours	Office Hours	İletişim
Lecturer Ayşe Tazegül	Monday 10:15–15:25	Tuesday–Thursday 10:00–16:00	ayseercan@cag.edu.tr
Course Coordinator	Lecturer Ayşe Tazegül		

Learning Outcomes

Course Learning Outcomes	Upon successful completion of this course, the student will be able to:		Relations	
			Program Outcomes	Contribution
	1	Recall the types, basic properties, and classifications of chemical substances.	1,2	4,5
	2	Explain the routes of exposure to chemicals and their effects on human health and the environment.	1,2	5,5
	3	Apply rules for chemical storage, transportation, and usage.	1,2	5,5
	4	Analyze the causes and root factors of chemical accidents / Classify chemical agents in risk assessment.	1,2	5,5
	5	Design a chemical safety instruction or procedure / Develop an appropriate intervention plan for an emergency scenario.	1,2,4	5,5,5
	6	Evaluate existing chemical safety measures.	1,2	5,5
	7	Critically assess the adequacy of chemical management systems.	1,2	5,5

Course Objective and Description

The Chemicals and Hazards course addresses the properties of chemical substances used in workplaces, their potential effects on employee health and the environment, exposure routes, and prevention methods.

Within this scope, the classification of chemicals, hazard symbols and labeling systems (GHS/CLP), the use of Safety Data Sheets (SDS), introduction to toxicology, personal protective equipment, storage and transportation rules, and emergency response methods are covered. Additionally, occupational diseases caused by chemicals, explosion and fire risks, industrial hygiene measurements, and legal regulations are discussed, aiming to ensure a safe working environment.

Course Contents: (Weekly Course Plan)

Week	Topic	Preparation	Teaching Method and Techniques
1	Introduction to chemical safety: definitions and concepts	Review lecture notes	Lecture, Q&A
2	Classification of chemicals (organic,	Short pre-reading	Discussion, Presentation

	inorganic, etc.)	about classification	
3	Hazardous chemical legislation (GHS, CLP, OSHA, REACH)	Review relevant regulations	Lecture, Case Study
4	Routes of chemical exposure and basics of toxicology	Read case examples	Case Analysis, Discussion
5	Safety Data Sheet (SDS) and labeling	Review SDS examples	Demonstration, Practical Work
6	Storage and transportation of chemicals	Research accidents related to storage and transportation of chemicals	Lecture, Group Work
7	Personal Protective Equipment (PPE) and chemical safety	Examine examples of PPE	Visual Presentation
8	Midterm Exam		
9	Midterm Exam		
10	Chemical waste management and environmental impacts	Read sample reports	Lecture, Practical Example
11	Chemical fire and explosion risks	Research current events	Case Analysis, Brainstorming
12	Emergency plans and intervention methods	Review sample emergency plans	Watch videos of drills, Lecture
13	Measurement and monitoring methods (gas, vapor, dust)	Review measurement reports	Lecture, Practical Work
14	Sectoral chemical risks (health, mining, construction, agriculture)	Select a sector and research its chemical risks	Group Work, Comparison
15	Root cause analysis in chemical accidents	Prepare a case study	Case Analysis, Presentation
16	OHS management systems (relationship between ISO 45001 and ISO 14001)	Prepare a summary of the topic	Presentation, Discussion
17	Final Exam		
18	Final Exam		

Course Resources

Course Book	Olçay, Z. F. (2023). <i>Investigation of Chemical Risk Factors in Terms of Occupational Health and Safety</i> . Nobel Academic Publishing.
Recommended Resources	Spellman, F. R. (2020). <i>Occupational Safety and Health Simplified for the Chemical Industry</i> (2nd ed.). CRC Press.

Assessment and Evaluation

Activity	Number	Contribution (%)	Notes
Midterm Exam	1	20	Written exam
Assignment	1	10	Individual report
Presentation	1	10	Group presentation / poster work
Participation / In-Class Activities	1	10	Active participation in discussions, group work, and class activities
Final Exam	1	50	Comprehensive written exam

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Activity	Number	Hours	Total
Class Duration	14	3	42
Out-of-Class Study	14	5	70

Assignments	1	24	24
Presentation	1	24	24
Participation / In-Class Activities	1	14	14
Midterm Exam (Exam + Preparation)	1	32	32
Final Exam (Exam + Preparation)	1	36	36
Total			241
Total / 30			241 / 30
ECTS Credit			8

