



University of Lodz
Faculty of Biology and Environmental Protection

Education programme

Postgraduate studies
„CBRN security manager”

Lodz, 2017

Project: 'Support for European Union action in the field of CBRN security managers education' No. HOME/2015/ISFP/AG/CBRN/4000008459





1. Name

„CBRN security manager”

Study Profile: practical, improving

Duration: 2 semesters, non-stationary model

Director of studies: Michal Bijak, PhD – Department of General Biochemistry, Faculty of Biology and Environmental Protection, University of Lodz

2. Brief description of studies

The main aim of the course is to train a highly specialized group of CBRN Security Managers with specialist qualifications that can be used in a variety of crisis situations involving the risk of terrorist attacks using chemical, biological and radiological/nuclear agents.

The curriculum covers both theoretical and practical subjects, which will be taught by experts from leading institutions in this field.

22 subjects are included in the course, with 189 hours of lectures and 230 hours of practical exercises. The biological part will be conducted at the Faculty of Biology and Environmental Protection, University of Lodz. The practical training on biological material sampling and fieldwork of in biological materials detection will be conducted by the staff of the Military Institute of Hygiene and Epidemiology. The chemical and radiological modules will be held at the Military Institute of Chemistry and Radiometry. Activities related to counter-terrorism will be run by the Antiterrorist Operations Bureau of the National Police Headquarters. All training related to explosives will be conducted in Slovakia by the International Security and Emergency Management Institute in Žilina. At the Police Academy in Szczytno, training in crisis management, legal aspects of CBRN-E and collection of CBRN-E evidence will be conducted.

These studies are aimed at persons involved in CBRN-related internal security activities, mainly officers of the Police, State Fire Brigade, Border Guard, Government Protection Bureau and other Institutions or Organisations involved in combating these kinds of threats.

3. Learning objectives

- Obtain knowledge of: CBRN legal basics, crisis management, forensic techniques, microbiology, toxicology, genetics, biological toxins, radiation and radiobiology, biological material and chemical compounds detection methods, sampling methods, individual protection measures, decontamination, pyrotechnic action, the structures and organization of anti-terrorism institutions, and models of decision-making in crisis situations.
- Prepare to work in a hazardous environment with CBRN materials.
- Acquire the ability to self-collect and secure biological samples.
- Acquisition of skills in the use of basic methods of biochemistry and molecular biology.
- Acquire the ability to handle chemical detection equipment.
- Acquire the skills to select appropriate personal protective equipment for the current threat.
- Acquire the skills to secure evidence at a CBRN incident scene.
- Acquisition of the ability to perform measurements of radiation.
- Prepare to make decisions in CBRN crisis situations.
- Prepare to conduct pyrotechnical reconnaissance activities.

4. Pre-requisites for candidates

Applicants for this study studies must hold a Master's degree or equivalent.

5. Principles of recruitment

Recruitment will be open to candidates who fulfil the admission requirements. In case the number of applications exceeds the number of planned places (30, in 2 groups of 15), the recruitment commission will select the best candidates for entry to the course (no later than 14 days before the start of the study).

Required documents:

1. CV of the candidate.
2. Candidate questionnaire with signed application form (downloadable from the Recruitment tab on the www.secbrnure.uni.lodz.pl website).
3. Copy of Master's degree or equivalent.

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4. Passport-size Photo for student identity card.

5. Learning areas

- Life sciences
- Physical sciences
- Social sciences

6. Learning outcomes:

KNOWLEDGE learning outcomes – Students:

- W01** – define the basic concepts of chemical, biological, radiological and nuclear hazards,
W02 – list potential CBRN threats,
W03 – explain the formal and legal aspects of action in CBRN events,
W04 – characterize technology use in CBRN detection,
W05 – describe the procedures used in biochemistry and molecular biology,
W06 – describe the procedures used in chemical analysis,
W07 – describe the procedures used in decontamination,
W08 – characterize the most popular explosives and their precursors,
W09 – characterize methods of collecting and analysing CBRN evidence,
W10 – define basic safety rules when working with explosives and CBRN agents,
W11 – characterize potential routes of entry and the effect of CBRN agents on the body,
W12 – explain the organizational structure of internal security and counter-terrorism systems in Poland and the European Union.

SKILLS learning outcomes – Students:

- U01** – foresee possible threats at the scene of a CBRN terrorist incident,
U02 – interpret incident scenes and formulate conclusions for further action,
U03 – make use of legal instruments during CBRN work,
U04 – collect and adequately secure CBRN material from incident scenes,
U05 – use biochemistry and molecular biology techniques to diagnose biological threats,
U06 – use analytical chemistry techniques to identify dangerous chemical agents,
U07 – perform radiometric measurements,
U08 – select analytical equipment suited to the situation,

- U09 – perform basic forensic analyses and secure evidence at CBRN incident scene,
- U10 – use personal protective equipment appropriate to the conditions of the incident scene,
- U11 – carry out a self-service decontamination procedure as well as decontamination of other people and equipment used during the operation,
- U12 – conduct basic pyrotechnic identification procedures,
- U13 – adapt safety rules to activities in CBRN environments,
- U14 – use specialist terms in developing laboratory documentation,
- U15 – use available sources of information to verify obtained results.

SOCIAL COMPETENCE learning outcomes – Students:

- K01 – feel responsible for own and others’ safety,
- K02 – work well in a CBRN response team, either as a manager or team member,
- K03 – work alone or in a team performing complex experimental procedures,
- K04 – critically evaluate the effects of own and others’ work,
- K05 – justify the need to constantly improve own professional qualifications,
- K06 – treat entrusted equipment, own and others’ work responsibly,
- K07 – apply the principle of respect for intellectual property,
- K08 – organize teamwork and define priorities for accomplishing tasks,
- K09 – work in accordance with professional ethics.

7. Study Plan

Subject	Subject details				Response Institution	
	Hours		Learning outcomes verification	ECTS		
	Lecture	Practice				
1	SELECTED LEGAL ISSUES IN CBRN-E	5	4	Final	2	WSPol
2	CRISIS MANAGEMENT	10	26	Final	4	WSPol
3	SELECTED ISSUES IN FORENSIC TECHNIQUES	20	26	Exam	5	WSPol
4	MICROBIOLOGY	10	-	Exam	2	UL
5	TOXICOLOGY	8	-	Final	1	UL
6	GENETICS	7	-	Final	1	UL
7	BIOLOGICAL TOXINS	10	-	Exam	2	UL
8	RADIOBIOLOGY	7	-	Final	1	UL
9	METHODS OF DETECTING BIOLOGICAL MATERIALS	-	33	Final	4	UL
10	ORGANISATION OF THE BIOLOGICAL SAMPLING PROCESS	8	20	Final	4	MIHE
11	METHODS FOR BIOLOGICAL SAMPLING AND FIELD ANALYSIS OF SAMPLES	7	20	Final	4	MIHE
Semester 1		92	129	Total = 221	ECTS = 30	
12	INDIVIDUAL PROTECTIVE EQUIPMENT	7	8	Final	2	MICR
13	DETECTION OF CHEMICAL CONTAMINANTS	12	16	Exam	3	MICR
14	DECONTAMINATION OF CHEMICAL AGENTS	7	13	Final	2	MICR
15	RADIATION	8	-	Final	1	MICR
16	RADIATION DETECTION AND PROTECTION PROCEDURES	7	20	Final	3	MICR
17	PYROTECHNIC RECOGNITION	19	16	Exam	4	ISEMI
18	FORMAL AND LEGAL BASIS FOR COMBATING TERRORISM	13	4	Final	3	UL
19	DECISION-MAKING IN EMERGENCY ACTIVITIES DURING TERRORIST ATTACKS	12	4	Final	2	UL
20	TERRORISM AS A THREAT TO PUBLIC ORDER	12	-	Exam	2	UL
21	ANTI-TERRORIST ACTIONS INVOLVING CBRN MATERIALS	-	20	Final	2	KGP/BOA
22	DIPLOMA THESIS PREPARATION	-	-		6	All
Semester 2		97	101	Total = 198	ECTS = 30	

W0 1	SELECTED LEGAL ISSUES IN CBRN-E			X	X		X	X				X		X			X	X	X
	CRISIS MANAGEMENT																		
	SELECTED ISSUES IN FORENSIC TECHNIQUES																		
	MICROBIOLOGY																		
	TOXICOLOGY																		
	GENETICS																		
	BIOLOGICAL TOXINS																		
	RADIOBIOLOGY																		
	METHODS OF DETECTING BIOLOGICAL MATERIALS																		
	ORGANISATION OF THE BIOLOGICAL SAMPLING PROCESS																		
	METHODS FOR BIOLOGICAL SAMPLING AND FIELD ANALYSIS OF SAMPLES																		
	INDIVIDUAL PROTECTIVE EQUIPMENT																		
	DETECTION OF CHEMICAL CONTAMINANTS																		
	DECONTAMINATION OF CHEMICAL AGENTS																		
	RADIATION																		
	RADIATION DETECTION AND PROTECTION PROCEDURES																		
	PYROTECHNIC RECOGNITION																		
	FORMAL AND LEGAL BASIS FOR COMBATING TERRORISM																		
	DECISION-MAKING IN EMERGENCY ACTIVITIES DURING TERRORIST ATTACKS																		
	TERRORISM AS A THREAT TO PUBLIC ORDER																		
	ANTI-TERRORIST ACTIONS INVOLVING CBRN MATERIALS																		
	DIPLOMA THESIS PREPARATION																		

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W02	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
W03	X	X																	X	X	X	
W04						X			X	X	X		X		X	X	X				X	
W05				X	X	X	X	X	X	X	X											
W06													X			X						X
W07										X			X									X
W08																	X					
W09			X						X	X	X		X				X					X
W10		X		X	X		X	X	X	X	X	X	X	X	X	X	X		X		X	X
W11				X	X	X	X	X		X	X	X	X	X	X	X						
W12	X																	X	X	X	X	
U01		X		X	X		X	X				X	X	X		X	X		X	X	X	X

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U02		X	X	X	X		X	X	X	X	X		X			X	X	X	X	X	X		
U03	X	X															X	X	X	X			
U04			X						X	X	X		X										
U05						X			X	X	X												
U06													X									X	
U07																X						X	
U08									X	X	X		X			X						X	
U09		X							X	X	X		X				X						
U10		X								X	X	X	X			X						X	
U11											X			X								X	
U12																	X						
U13				X	X		X	X	X	X	X	X	X	X	X	X	X		X			X	
U14	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
U15	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

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K01		X		X	X		X	X				X	X	X	X	X	X		X	X	X		
K02	X	X				X			X	X	X	X	X	X		X	X	X	X	X	X		
K03			X						X	X	X		X			X							
K04		X	X						X	X	X		X			X		X	X		X	X	
K05		X	X						X	X	X		X			X	X		X		X		
K06			X						X	X	X		X	X		X	X				X		
K07									X													X	
K08	X	X																X	X		X		
K09	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

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8. Total number of ECTS – 60

9. Description of learning outcomes verification

Lectures:

- Exam: written form – a test or descriptive answer to the problem or issues,
- Final: written or oral summary.

Practical classes:

- Theoretical preparation for classes (short written test, discussion),
- Use of laboratory equipment and perform analyses,
- Operate in field conditions during field training,
- Work in a group, self-problem solving in class,
- Written summary test.

10. Costs

These studies are financed by the European Commission, as part of the ‘Support for European Union action in the field of CBRN security managers education’ project, with grant agreement HOME/2015/ISFP/AG/CBRN/4000008459. All costs of students on the course will be covered by the organisers.



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