COURSE DESCRIPTION CARD - SYLLABUS

Course name
Monitoring and protection of critical infrastructure [N2IBiJ1-BiZK>MiOIK]

Course

Field of study
Safety and Quality Engineering

Year/Semester
2/3

Area of study (specialization)
Safety and Crisis Management

Profile of study
general academic

Level of study
second-cycle

Course offered in
Polish

Form of study
part-time

Requirements
compulsory

Number of hours

Lecture
0

Laboratory classes
10

Other
0

Tutorials
0

Projects/seminars
10

Number of credit points

2,00

Coordinators

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Lecturers

Prerequisites

The student beginning education should be familiar with basic emergency management terminology and the classification of critical infrastructure.

Course objective

The aim of the course is to transfer knowledge in the field of methods, techniques and conditions for the protection of critical infrastructure (European, national, provincial, county, commune and significant at the level of enterprises) and to identify and assess the levels of threats that may affect its functioning.

Course-related learning outcomes

Knowledge:
1. Student knows the methods, tools and criteria for identifying critical infrastructure [K2_W01].
2. Student knows methods of identifying and analysing the level of threat to critical infrastructure [K2_W03].
3. Student has expertise in critical infrastructure accident modelling and in the selection and design of critical infrastructure protection measures [K2_W06].

Skills:
1. Student is able to assess the effectiveness of selected forms of critical infrastructure protection [K2_U02].
2. Student be able to develop a hierarchy of importance for critical infrastructure [K2_U03].
3. Student is able to select and evaluate and design selected methods of critical infrastructure protection [K2_U05].

Social competences:
1. Student is aware of the cause-and-effect relationships in critical infrastructure protection design [K2_K02].
2. Student is aware of the need to continuously develop and learn new methods and tools for studying and protecting critical infrastructure [K2_K05].

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Formal evaluation:
a) in terms of project activities: based on the implementation of projects carried out by subgroups;
b) in terms of laboratory exercises: on the basis of a colloquium taken during the last classes and an evaluation of the completion of tasks during laboratory exercises.
Summary evaluation:
a) in the scope of project activities: on the basis of the arithmetic mean of partial marks for tasks/subjects of the project;
b) in the scope of laboratory exercies: on the basis of the arithmetic mean of the grades from the colloquium and the realization of tasks during the classes.
Passing threshold: 51% of points.
Grading system:
Points Grade:
0 - 50 Fail (2)
51 - 59 Satisfactory (3)
60 - 69 More than satisfactory but less than good (3+)
70 - 79 Good (4)
80 - 89 Very good (4+)
90 - 100 Excellent (5)

Programme content

Phases of critical infrastructure. Identifying threats to critical infrastructure. Standardisation in the assessment of critical infrastructure threats. Critical infrastructure threat monitoring methods, tools and techniques. Smart Critical Infrastructure (SCI). Indicators of vulnerability, sensitivity and resilience of SCI to disruption. Phases in the course of a critical infrastructure disruption. Analysis of levels of effectiveness of protection (physical, technical, personnel, ICT and legal) of critical infrastructure. Methods for assessing the validity of critical infrastructure in terms of risk, protection and recovery. Measures of critical infrastructure protection levels. Modelling of critical infrastructure failure. Design of critical infrastructure protection systems.

Course topics

Phases of critical infrastructure. Identifying threats to critical infrastructure. Standardisation in the assessment of critical infrastructure threats. Critical infrastructure threat monitoring methods, tools and techniques. Smart Critical Infrastructure (SCI). Indicators of vulnerability, sensitivity and resilience of SCI to disruption. Phases in the course of a critical infrastructure disruption. Analysis of levels of effectiveness of protection (physical, technical, personnel, ICT and legal) of critical infrastructure.
Methods for assessing the validity of critical infrastructure in terms of risk, protection and recovery. Measures of critical infrastructure protection levels. Modelling of critical infrastructure failure. Design of critical infrastructure protection systems.

Teaching methods

Exercises supported by a multimedia presentation with task solving. Project activities carried out in a computer lab with the use of specialist programs.

Bibliography

Basic:
1. Krajowy Plan Zarządzania Kryzysowego RP.
2. Narodowy Program Ochrony Infrastruktury Krytycznej RP.
3. Strategia Rozwoju Systemu Bezpieczeństwa Narodowego RP.
4. Strategia Bezpieczeństwa Narodowego RP.

Additional:
1. Bagińska J.M. (2017), Ochrona baz paliw płynnych jako elementu infrastruktury krytycznej w aspekcie wybranych aktów normatywnych, Wydawnictwo SAN, Przedsiębiorczość i Zarządzania, Tom XVIII, Zeszyt 5, Część I, ss. 103-117.
2. Jakubiak E. (2018), Ochrona infrastruktury krytycznej w Polsce, Zeszyty Naukowe SGSP, Szkoła Główna Służby Pożarniczej, Nr 66, 165-175.
3. Kaak W. (2017), Faza odbudowy w wojewódzkich planach zarządzania kryzysowego. Studia Administracji i Bezpieczeństwa, nr 3, ss. 219-229.
4. Radziejewski R. (2014), Ochrona infrastruktury krytycznej. Teoria i praktyka, Wydawnictwo Naukowe PWN, Warszawa.
5. Sadowski J. (2018), Ochrona infrastruktury krytycznej : geneza problemu, Instytut Naukowo-Wydawniczy "SPATIUM". sp. z o.o., Autobusy : technika, eksploatacja, systemy transportowe, R. 19, nr 6, ss. 1237-1241.
6. Dahlke G. (2020), The anthropometric criterion in the modelling of evacuation, Informatyka Ekonomiczna, nr 1, s. 21-37..

Breakdown of average student's workload

	Hours	ECTS
Total workload	60	2,00
Classes requiring direct contact with the teacher	20	0,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	40	1,50