Fire University of Warsaw, Poland
Faculty of Security Engineering and Civil Protection
Syllabus 2018 -

Electric fire investigation

profile	general academics
degree	first degree
programme	ERASMUS
semester	1
part time / full time	full time
ECTS	2
coordinator	mł. bryg. dr inż. Szymon Ptak

form of the activity: exercise

hours	15
prerequisites	The student has a knowledge of the basics of electrical engineering, including: the functioning of common electrical installations, technical solutions used in the field of security, as well as an understanding of the basic physical phenomena that determine the operation of electrical machines.
objectives	The aim of the subject is to familiarize students with the most important information on the functioning of electrical installations and electrical devices for common use in the context of the fire and shock hazards. The aim of the subject is to provide knowledge on the possible causes of fire and to indicate the procedure in the fire investigation. An additional aim of the subject is to use a significant number of case studies to provide the necessary knowledge.
methods	Lecture (topic-oriented) divided into sections focused on particular case-study.
own work	Literature review. Final project - fire investigation (based on historical incident) described in writing and presented to the teacher.
basic literature	Electrical fires and explosions / Vytenis Babrauskas, Ph.D. / New York / 2021 Fire investigator : principles and practice to NFPA 921 and 1033 / International Association of Fire Chiefs, International Association of Arson Investigators, National Fire Protection Association / Burlington / 2019
supplementary literature	Scientific Protocols for Fire Investigation / John J. Lentini. / New York / 2019 Fire Investigation / ed.by Niamh Nic Daeid. / London / 2004

contents	hours
Electric installation - test procedures and their importance. Typical malfunctions. Case studies - electric fires and/or explosions.	3
Contact resistance - causes, physical phenomena, prevention. Fire hazard. Case studies - electric fires and/or explosions.	2

Power engineering - energy production and distribution. System stability. Electric energy transformation. Safety and aging of the transformers. Case studies - electric fires and/or explosions.	3
Electrodynamic force, electric arc. Physical phenomena, hazards, prevention. Case studies - electric fires and/or explosions.	2
Overcurrent protection in low voltage and high voltage lines. Case studies - electric fires and/or explosions.	2
Electrochemical sources. Characteristics, hazards, aging. Electromobility. Fire prevention. Case studies - electric fires and explosions.	3