IMPRESS - WORKING PACKAGE 3

R E P O R T
(November, 2019)

T3.2b Book of Syllabi

After consideration between the Partners, a list of **18 courses** to be included in newly developed study modules and implemented in Serbian HEIs from the school year 2020/2021 has been defined as follows:

1. ATRISC, France: 3 syllabi
2. Sant'Anna School of advanced Studies, Italy: 3 syllabi
3. Steinbeis University, Berlin, Germany: 7 syllabi
4. The Main School of Fire Service, Poland: 3 syllabi
5. Ionian University, Greece: 2 syllabi

Book of Syllabi is presented in Tables 1 to 18.

ATRISC, France:

1. Decision Making in Crisis Management
2. Business Continuity Activities in Industry and Organization
3. Social Network in Crisis and Disaster Management

Table 1. Syllabus 1: **Decision Making in Crisis Management**

Study programme: SPECIALIST APPLIED STUDIES -SECURITY RISK ASSESSMENT –
Course title: Decision Making in Crisis Management
Lecturer: Prof. dr. Petar Stanojević
Course status: mandatory
ECTS: 8
Requirement: 180 ECTS in previous studies
Course aims Acquiring knowledge and skills for independent critical approach to decision-making and leadership problems in economies and organizations in crisis and emergency situations. Mastering methods and techniques for risk quantification and decision-making.
Course outcomes Within the concept of corporate safety, master the principles of organization, communication lines, ways of decision-making, be able to participate in solving problems of management through methods and techniques of decision-making, master the principles and methods of leadership, especially in emergency and crisis situations. Adopt legislation, standards and best practice.
Corse content *Theory classes* It covers the following thematic areas: Domestic legislation and business standards; International Standards for Emergency Response; French Emergency Response Standard; Organization and Management, Organizational Culture, Crisis Leadership; Teamwork, strategy management, emergency decision-making and command systems; Applicable Decision Making Methods and Techniques, Project Management. *Practice classes* It will be conducted through the implementation of exercises, study visits to companies of particular importance and the organization of workshops in order to review good and bad decision-making and leadership practices, as well as simulation, ie crisis management game management.
Literature Basic: 1. Kešetović, Krizni menadžement, Hrestomatija. 2. Ilija Nikolić, Siniša Borović; Višekriterijska optimizacija (metode, primjena u logistici, softver), Centar za vojne škole Vojske Jugoslavije, 1996. 3. Vidal R, Journal of Contingencies and Crisis Management, « Managing Uncertainty: The Engineer, the Craftsman, and the Gardener », 2015

4. Vidal R., "Managing the Tension between Adaptation and Adaptability: The case of Requisite Variety", working paper, UC Berkeley – Center for Catastrophic Risk Management, 2008

5. Vidal R., Harbour T., Jorda L., « How lessons learned by High Reliability Organizations can improve incident management", The 5th International Wildland Fire Conference, Sun City, South Africa, 9–13 May 2011

6. Vidal R., 2018, « Design and implementation of High Reliability Organizing base performance metrics in the context of the EU H2020 research project TARGET, aiming a developing VR/AR training environment for security critical agents », 20th Congress International Ergonomics Association

7. Stanojevic Petar, Mirjana Misita, Jeftic Zoran, Milosevic Mladen, Miskovic Vasilije, Bukvic Vladimir, Organizational design based on simulation modeling, The International Journal of Advanced Manufacturing Technology, 23 December 2017, https://doi.org/10.1007/s00170-017-1453-0, Print ISSN 0268-3768, pp 1-16, Volume 93, Issue 9-12.

Additional:

8. Tiberghien B, Vidal R., Arnaud C., , "Managing the Tension between Control and Mindfulness: The case of Wildland Firefighting in France and the USA". In Brown D. & Czaputowicz J., Dealing with Disasters: Public Capacities for Crisis and Contingency Management, Brussels, Belgium: Bruylant Publications, 2015

9. Vidal R, Facing uncertainty: a question of sensemaking, a real-time measure. (2014) 19ème Congrès Lambda Mu (Institut pour la Maîtrise des Risques)

10. Frerson C., Training Incident Management Teams to the Unexpected: The benefits of simulation platforms and serious games. Proceedings of the Serious Games & Simulation Workshop, Paris, 43-48, 2012

Number of active teaching classes: 5	**Theory classes:** 4	**Practice classes:** 1

Teaching methods lectures, practical classes, practical training, simulation games, colloquium, seminar.

Knowledge assessment (max 100 points)

Pre-exam tasks	Points	**Final exam**	Points
In class activity	5	Written exam	60
Practice activity	5	Oral exam	
Presentation	5	.....	
Seminar	25		

Table 2. Syllabus 2: **Business Continuity Activities in Industry and Organization**

Study programme: SPECIALIST APPLIED STUDIES -SECURITY RISK ASSESSMENT –			
Corse content *Theory classes* It covers the following thematic areas: Legislation and business standards; International standards in business continuity and crisis management; Importance of security component, HSSE in business of business entities; Crisis management and business continuity; Basic tools and methodology; Mode of education, training and exercises; Defense plan and business continuity of economic entities determined to be of importance for defense and security situations. *Practice classes* It will be conducted through the implementation of practical classis, study visits to companies of special importance and the organization of workshops in order to review the good and bad business practices of business entities. Simulation of crisis management through organization and business processes			
Course aims Acquiring specific knowledge and abilities for independent critical approach to the problems of business continuity in industry and organizations in emergency, state of emergency and war situations.			
Course outcomes Within the concept of corporate security, master the principle of business continuity, especially in emergency, state of emergency and war. Adopt legislation, standards and best practice.			
Course status: elective			
Course title: Business Continuity Activities in Industry and Organization			
ECTS: 6			
In class activity	5		
Knowledge assessment (max 100 points)			
Lecturer: Prof. dr. Petar Stanojević, prof. dr. Zoran Jeftić			
Literature Basic: 1. Robert T Wood, „Corporate Security Manager“ CPSIA, 2016 2. Vidal R, Journal of Contingencies and Crisis Management, “Managing Uncertainty: The Engineer, the Craftsman, and the Gardener”, 2015 3. Vidal R., “Managing the Tension between Adaptation and Adaptability: The case of Requisite Variety, working paper, UC Berkeley” – Center for Catastrophic Risk Management, 2008 4. Vidal R., “Living with Wildland Fires: Community Resiliency through Virtual Reality”, white paper, UC Berkeley – Center for Information Technology Research in the Interest of Society (2008 Universities of California Contest) 5. Brown D. & Czaputowicz J., “Dealing with Disasters: Public Capacities for Crisis and Contingency Management”, Brussels, Belgium: Bruylant Publications, 2015			

6. Stanojevic P., Miskovic V., Jeftic Z.; „Overview of elements of national logistics system in the Republic of Serbia“ , Vojno delo, no. 4., p. 96 -120, 2017.

7. Momcilo Milinovic, Željko Ivaniš, Zoran Jeftic, Zoran Keković „Enhancing resilience of critical infrastructure due to threats by extending concepts of regional defence and public –private cooperation“ RECIPE, Split, 2016.

Additional:

8. Vidal R., Harbour T., Jorda L., „How lessons learned by High Reliability Organizations can improve incident management”, The 5th International Wildland Fire Conference, Sun City, South Africa, 9–13 May 2011

9. Vidal R., 2018, „ Design and implementation of High Reliability Organizing based performance metrics in the context of the EU H2020 research project TARGET, aiming at developing VR/AR training environment for security critical agents „, 20th Congress International Ergonomics Association

10. Vidal, R; Roberts K. H, Journal of Contingencies and Crisis Management, „Observing Elite Firefighting Teams: The Triad Effect“, March 2014, Vol 22, Issue 1, pp 18-28

11. Frerson C., „Training Incident Management Teams to the Unexpected: The benefits of simulation platforms and serious games“. Proceedings of the Serious Games & Simulation Workshop, Paris, 43-48, 2012.

12. Jeftić, Z. Maric, P. i Ristanović, E. (2015). “*Regional cooperation as the optimal response to emergencies”.* Col-lected paper (p. 27-34) – 7. International Congress on 'Ecology, Health, Work and Sport'. Banja Luka, Bosnia and Hercegovina- The Republic of Serbian, ISBN 987-99955-619-3-6

13. Goran J Mandić, Zoran Jeftić, (2018), „Proaktivna i reaktivna akcija pružanja pravnih osoba u borbi protiv terorizma, Zbornik radova regionalne konferencije„ Regionalna suradnja u borbi protiv prekograničnog kriminala: suvremeni izazovi terorizma i migrantske krize “Bijeljina, Republika Srpska, BiH 22.-24. Svibnja 2018., Sveučilište u Banjaluci, Fakultet sigurnosnih znanosti, 1-3, str. 185-195.

13. ISO 22330 BCP

Number of active teaching classes: 7	**Theory classes:** 4	**Practice classes:** 3	
Practice activity	5		60
Pre-exam tasks	Points	**Final exam**	Points
Presentation	20		
Requirement: 180 ECTS in previous studies			

Seminar	10		
Teaching methods lectures, practical classes, practical training, simulation games, colloquium, seminar.			
The methods of assessment can be different listed in the table are just some options: (written exams, oral exam, project presentation, seminars etc.			

Table 3. Syllabus 3: **Social Network in Crisis and Disaster Management**

Study programme: SPECIALIST APPLIED STUDIES -SECURITY RISK ASSESSMENT –
Course title: Social Network in Crisis and Disaster Management
Lecturer: Zelimir Kešetović, Ana Kovačević and Marko Rakić
Course status: elective
ECTS: 6
Requirement: /
Course aims Introduction and understanding the basic elements of social networks, as well as their potential for crisis and disaster management. In addition, students need to gain basic knowledge of crisis management.
Course outcomes Theoretical and practical knowledge of the potential applications of social networks in crises and disasters.
Corse content *Theory classes* • Social networks: basic principles, analysis and application • Crisis management • Implementation of social networks in crisis management • Social networks in emergencies • Social networks and social organizations *Practice classes* Through case studies and scenario development, deepening the acquired knowledge and techniques.
Literature 1. Kešetović, Ž. (2008). Krizno upravljanje, Fakultet bezbednosti 2. Kešetović, Ž, Toth, I. (2012). *Problemi kriznog menadžmenta* – znanstvena monografija. Velika Gorica:VeleučilišteVelika Gorica/Visoka škola za sigurnost sa pravom javnosti/Centar za međunarodne i sigurnosne studije Fakulteta političkih znanosti u Zagrebu, Velika Gorica, str.263. ISBN 978-953-7716-34-9

3. Kešetović, Ž., Marić, P. and Ninković, V. (2017), "Crisis communication of Local Authorities in Emergency Situations – Communicating "May Floods" in the Republic of Serbia", *Lex Localis- Journal of local self-government,* Vol. 15, No. 1, pp. 93 – 109

4. Kešetović, Ž. (2014) *Crisis Management in Serbia - In the Search for the Optimal Model*, LAP Lambert Academic Publishing

5. Kešetović, Ž. Toth, I. i Korajlić, N. (2014). "Apology as Crisis Communication", *Collegium Antropologicum*, Vol. 38. Suppl. 1. No. 1 pp. 171–178

6. Reuter, C., & Kaufhold, M. A. (2018). Fifteen years of social media in emergencies: A retrospective review and future directions for crisis Informatics. *Journal of Contingencies and Crisis Management*, *26*(1), 41-57.

7. Eriksson, M., & Olsson, E. K. (2016). Facebook and Twitter in crisis communication: A comparative study of crisis communication professionals and citizens. *Journal of Contingencies and Crisis Management*, *24*(4), 198-208.

8. Wukich, C. (2016). Government social media messages across disaster phases. *Journal of Contingencies and Crisis Management*, *24*(4), 230-243.

9. Brynielsson, J., Granåsen, M., Lindquist, S., Narganes Quijano, M., Nilsson, S., & Trnka, J. (2018). Informing crisis alerts using social media: Best practices and proof of concept. *Journal of Contingencies and Crisis Management*, *26*(1), 28-40.

Number of active teaching classes:	**Theory classes:** 4	**Practice classes:** 2

Teaching methods lectures, practical classes, practical training, seminar.

Knowledge assessment (max 100 points)

Pre-exam tasks	Points	**Завршни испит**	Points
In class activity	20	Written exam	50
Practice activity	30	Oral exam	
Presentation		.....	
Seminar			

The methods of assessment can be different listed in the table are just some options: (written exams, oral exam, project presentation, seminars etc.

Sant'Anna School of advanced Studies, Italy

1. Sustainability performance measurement
2. Relation with stakeholders and communication in disaster
3. Occupational health and Safety acc. to ISO 45001, extension of Introduction to Risk Management

Table 4. Syllabus 4: **Sustainability performance measurement**

Study programme:
Course title: Sustainability performance measurement
Lecturer: Massimo Battaglia, Nora Annesi, Patrizia Gragnani
Course status: Elective
ECTS:
Requirement: /
Course aims The course will be focused on methods and instruments of sustainability performance measurement. The course will analyse main sustainability accounting and accountability instruments and their importance for decision making at company level. Moreover, attention will be also directed to methods for the economic evaluation of cost safety lack.
Course outcomes Students will be trained about sustainability principles and methods for the integration of SDGs and indicators of sustainability in public and private bodies.
Course content *Theory classes* 1. Sustainability management and its evolution 2. Introduction to the 17 SDGs and 169 targets. 3. From the MDGs to SDGs measure and monitor them. 4. SDGs achievement in Europe and other countries 5. National implementation of SDG. 6. Identification of territorial sustainability-related (socio – economic and environmental) issues, and 7. How to monitor them and evaluate their significance (in order to prioritize managerial and planning initiatives) 8. Definition of key performance indicators (KPIs) aimed at measuring both local and global sustainability performance, adoptable by both private organizations and policy makers. 9. Stakeholder theory and its evolution. 10. Freeman stakeholder approach. 11.Stakeholder engagement from theories to practice: techniques engagement. 12. Measuring the impact on stakeholders: technical key performance indicators. 13. The materiality matrix. 14. Stakeholder theory and management: empirical research and readings. 15. Test *Practice classes* 1. Sustainability management case. 2. 17 SDGs integration 3. 169 SDGs target integration 4. SDGs and Target measurement and accountability. 5. National positioning reports and Sustainable Development strategies readings. 6. Socio-economic and environmental issues identification. 7. KPI monitoring cases 8. Measurement of sustainability KPI 9. Stakeholder engagement cases 10. Freeman readings 11. Engagement techniques. 12. Stakeholder indicators measurement 13. Design a materiality matrix 14. Stakeholder case studies. 15. Preparation for final exam

Literature

- Showed materials during the course; 2030 Agenda document; The G4 Guidelines
- Brundtland GH. Report of the World Commission on environment and development:" our common future.". United Nations; 1987.
- Luke TW. Neither sustainable nor development: reconsidering sustainability in development. Sustainable development. 2005 Oct;13(4):228-38.
- Allen C, Metternicht G, Wiedmann T. Initial progress in implementing the Sustainable Development Goals (SDGs): a review of evidence from countries. Sustainability Science. 2018 Sep 1;13(5):1453-67

Number of active teaching classes: 10 (*3h)	**Theory classes: 7**	**Practice classes:** 3

Teaching methods

Teaching is conducted through theory and practice classes. Knowledge acquired during the lesson will be tested through an exercise. A case study will be provided to students, with request to respond to specific tasks. The class will be divided into groups, and each group will discuss the results and prepare a power point of solutions.
Presentation and discussion.

Knowledge assessment (max 100 points)

Pre-exam tasks	**Points**	**Final exam**	**Points**
In class activity	20	Written exam	30
Practice activity	10	Group presentation	40

Table 5. Syllabus 5: **Relation with stakeholders and communication in disaster**

Study programme:		
Course title: Relation with stakeholders and communication in disaster		
Lecturer: Massimo Battaglia, Nora Annesi		
Course status: Elective		
ECTS:		
Requirement: /		
Course aims The course provide possible information and communication technologies will be presented, in order to make the decision-making process more aware in terms of risk exposure. Students will be trained about the importance of stakeholder in general and in specific context.		
Course outcomes Students will be trained about		
Course content *Theory classes* 1. Stakeholder theory and its evolution. Freeman stakeholder approach. 2. Stakeholder engagement from theories to practice: techniques engagement. 3.Measuring the impact on stakeholders. 4.Technical key performance indicators. 5.The materiality matrix. 6.Method for stakeholder identification and mapping. 7.Communication with stakeholders during a crisis. 8.Production of public messages and specific information to stakeholders 9. Explanation and justification of actions, promotion of learning, and changes 10. Vulnerability, disaster, crisis concept 11. Stakeholders in vulnerability assessment. 12.Importance to involve and engage local stakeholders 13. Process of evaluation of local territorial sustainability-related issues. 14.Local perceptions are relevant to correctly manage these issues. 15. Test *Practice classes* 1. Stakeholder engagement cases 2. Freeman readings 3. Engagement techniques. 4. Stakeholder indicators measurement 5. Design a materiality matrix 6. Stakeholder case studies. 7.Communication to stakeholder during crisis cases. 8. Vulnerability, disaster and crisis cases. 9.KPI vulnerability disaster and crisis readings. 10.Stakeholder in vulnerability assessment reading. 11.Stakeholder engagement practice. 12.Socio-economic and environmental KPI identification. 13.Local perception identification. 14.Priority setting readings. 15.Preparation for final exam		
Literature - BS11200:2014 standard: Crisis management. Guidance and good practice – BSI Standard publication - Renn, O. (2001). The need for integration: risk policies require the input from experts, stakeholders and the public at large. Reliability Engineering and System Safety, 72 (2), 131–135		
Number of active	**Theory classes: 4**	**Practice classes:** 2

teaching classes: 6			
Teaching methods Knowledge acquired during the lesson will be tested through an exercise. A case study will be provided to students, with request to respond to specific tasks. Papers will be presented and analysed. The class will be divided into groups, and each group will discuss the results and prepare a power point of solutions.			
Knowledge assessment (max 100 points)			
Pre-exam tasks	**Points**	**Final exam**	**Points**
In class activity	30	Group presentation	70

Table 6. Syllabus 6: **Occupational health and Safety acc. to ISO 45001, extension of Introduction to Risk Management**

Study programme:

Course title: Occupational health and Safety acc. to ISO 45001, extension of Introduction to Risk Management

Lecturer: Nora Annesi, Massimo Battaglia

Course status:

ECTS:

Requirement: /

Course aims

The course has the aim to give a contribution to existing Serbian courses in term of control risks associated with health and safety within different workplaces. It's based on the implementation of OHSAS18001 (ISO45001) requirements.

Course outcomes

Students will be trained about International Standards for healthy and safety at work

Course content

Theory classes

1. Introduction to the issue of risks associated with health and safety at workplace. 2.Methods for risk assessment 3. Concepts of prevention and accident at work 4. Concept of hazard identification and acceptable risk 5. Benefits related to risk assessment. 6.Diffusion and main goals of the international standard OHSAS18001:2007 7. Identification and control of H&S risks, reducing the potential for accidents, aid legal compliance, improving overall performance. 8.PDCA approach and tendency to "continuous improvement". 9. Profile of the OHSAS18001:2007 standard: contents and requirements: general requirements, OH&S Policy, Planning, 10. Roles and responsibilities: competences, awareness and training. 11. Profile of the OHSAS18001:2007 standard: Implementation and Operation, Checking and internal audit, Management review. 12. Information about the process of certification: the certification (3rd part) audit. 13.Costs and benefits of OHSAS18001 certification. 14.News about ISO45001 15. Test

Practice classes

1. Health and safety at workplace readings 2. Risk assessment methods cases 3.Accident at work videos and cases 4.Hazard identification cases 5.Risk assessment practice 6.OHSAS 18001 goals identification 7. H&S risks readings. 8.PDCA approach design cases. 9.OHSAS requirements identification. 10.Roles and responsibilities identification 11. Internal audit case. 12.OHSAS practice 13. Cost and benefits of OHSAS readings. 14.ISO45001 practice. 15.Preparation for final exam

Literature

- ISO 18001 standard
- EU-OHSA (2010). Mainstreaming OSH into business management. Bilbao, Spain – available at file:///C:/Users/Massimo/Downloads/mainstreaming_osh_business_en.pdf -
-- Fernández-Muñiz B., Montes-Peón J.M., Vàzquez-Ordas C.J. (2009). Relation between occupational safety management and firm performance. Safety Science, 47: 980-991 –

- Bottani E., Monica L. e Vignali G. (2009). Safety management systems: Performance differences between adopters and non-adopters. Safety Science, 47: 145-152.
- Battaglia M., Frey M., Passetti E. (2015). Occupational health and safety management in municipal waste companies: A note on the Italian sector. Safety Science, 72: 55-65
- Sadiq Naeem (2012). OHSAS 18001 Step by Step - A Practical Guide. IT Governance Publishing

Number of active teaching classes: 8 (*3h)	**Theory classes: 5**	**Practice classes:** 3

Teaching methods

Teaching is conducted through theory and practice classes. Knowledge acquired during the lesson will be tested through an exercise. A case study will be provided to students, with request to respond to specific tasks. The class will be divided into groups, and each group will discuss the results and prepare a power point of solutions.
Presentation and discussion.

Knowledge assessment (max 100 points)

Pre-exam tasks	**Points**	**Final exam**	**Points**
In class activity	**30**	Written exam	20
		Group presentation	50

Steinbeis University, Berlin, Germany

1. Project Management in operations in the safety and security
2. Occupational Health and Safety
3. Public Health Oriented Risk Analysis
4. Quantitative Risk Assessment and Advanced Applications, extension of Introduction to Risk Management
5. Health, Safety, Security and Environmental Risks
6. Introduction to Risk Management
7. Business Communication and Management of Intercultural Differences

Table 7. Syllabus 7: **Project Management in operations in the safety and security**

Study programme: Project and Quality Management

Course title: Project Management in operations in the safety and security

Lecturer: Aleksandar Jovanović, Giovanni Uguccioni

Course status: Elective

ECTS:

Requirement: /

Course aims

This course aims to prepare attendees to the special environment of project work. Whether as project stakeholders or managers, they will learn the frameworks, tools and techniques allowing them to adapt to every situation and to work effectively. They will learn from experienced training how to avoid common mistakes and be able to understand both the technical and human aspects of a project.

Course outcomes

By the end of this course, students are able to: cope with uncertainties within the different project's phases, understand and use project management terminology, understand and apply project management frameworks, be familiar with the different aspects and scope of project management, understand and avoid the common mistakes made while managing projects, and have an overview of the existing tools.

Course content

Theory classes

1. Definition of project 2. Definition of project management 3. Project management process in safety and security organizations 4. Project deliverables 5. Project management activities 6. Project planning 7. Project organizing 8. Project leading 9. Project controlling 10. Project diagrams 11. Project activities 12. Project risk management in safety and security organizations 13. Project risks assessment 14. Risk response 15. Final exam

Practice classes

1. Project management process in safety and security organizations - case study 1 2. Project management process in safety and security organizations - case study 2 3. Project management process in safety and security organizations - case study 3 4. Project initiation and planning – case study 1 5. Project initiation and planning – case study 2 6. Project initiation and planning – case study 3 7. Project execution and control – case study 1 8. Project execution and control – case study 2 9. Project execution and control – case study 3 10. Project communication and HR management – case study 1 11. Project communication and HR management – case study 2 12. Project risk response in safety and security organizations - case study 1 13. Project risk response in safety and security organizations - case study 2 14. Project risk response in safety and security organizations - case study 3 15. Preparation for final exam

Literature

1. Texts including, but not limited to:

Chris Chapman, Stephen Ward (2003). Project Risk Management: Processes, Techniques and

Insights, Wiley.

Christoph Schwindt (2005). Resource Allocation in Project Management (GOR-Publications), Springer.

Project Management Institute (2006). The Standard for Program Management, Project Management Institute.

Alan D. Orr (2004). Advanced Project Management, Kogan Page.

2. Transparencies to accompany each course unit.

3. Additional material, e.g. certification material and other relevant directives and documents.

Number of active teaching classes: 12	**Theory classes:** 7	**Practice classes:** 5

Teaching methods

Practice case studies and exercises are proposed in class, and students are requested to undertake a mock analysis using the methodology described in the module. The learning experience is deepened by practical examples, with the use of knowledge and skills and the implementation of adequate assignments.

Knowledge assessment (max 100 points)

Pre-exam tasks	**Points**	**Final exam**	**Points**
In-class activity		written exam	100
Practice classes		oral exam	
Mid-term tests			
Seminar papers			

Participants must also attend over 50% of the lecturing time to be eligible for course credit.

Table 8. Syllabus 8: **Occupational Health and Safety**

Study programme: Health and Safety

Course title: Occupational Health and Safety

Lecturer: Giovanni Uguccioni

Course status: Elective

ECTS:

Requirement: /

Course aims

The course aims to explain the EU regulations in the field of safety and health of workers at work. The course also discusses the training of workers and their representatives.

Course outcomes

At the end of the course the participants are expected to know: which EU regulations are relevant for occupational safety and health, objectives, scope and requirements of the overall directive; requirements for special personnel assigned to deal with occupational safety and health, how to prevent occupational risks; and how to implement guidelines and principles in companies.

Course content

Theory classes

1. Introduction to occupational safety and health 2. General principles for preventing occupational risks 3. Protection of safety and health 4. Eliminating risk and accident factors 5. General guidelines for implementing occupational safety and health principles 6. Informing, consultation and balanced participation in accordance with national laws and/or practices 7. Objective and scope of Directive 89/391/EC: Overall directive "occupational safety" 8. Employer obligations under Directive 89/391/EC 9. General obligations under Directive 89/391/EC 10. Employee obligations under Directive 89/391/EC 11. Overview of separate directive for occupational safety and health terms of article 16 of directive 89/391/EC 12. Carcinogens, chemical and biological working materials 13. Safety and health signs at work 14. Special personnel for occupational safety 15. Final exam

Practice classes

1. Separate directive: Index 2. Separate directive: Workplace 3. Separate directive: Use of work equipment 4. Separate directive: Use of personal protective equipment 5. Separate directive: Working with visual display units 6. Separate directive: Manual handling of loads 7. Separate directive: Endangerment by physical agency 8. Example for implementation of the work equipment directives into national legislation: Ordinance of safety and health (Germany) 9. Example for the implementation from the directives on personal protective equipment: Personal protective equipment usage ordinance (PSA-Germany) 10. Example for implementation of European Council Directives:" Handling of loads" in the Germany Labour Protection Laws 11. Carcinogens, chemical and biological working materials – Case study 12. Safety and health signs at work – Case study 13. Special personnel for occupational safety: Example Germany 14. Specialists for occupational safety: work doctor, safety representative, occupational medics, and first-aid-helpers 15. Preparation for final exam

Literature

1. Textbook: OSHA Occupational Safety and Health, version 2, January 2010

2. Transparencies to accompany each course unit. 3. Additional material, e.g. certification material and other relevant directives and documents.		
Number of active teaching classes: 13	**Theory classes:** 7	**Practice classes:** 6
Teaching methods The course includes an introductory note explaining aim and structure of the course, as well as the used methodology; lecturing illustrated by a number of examples; and several collective group exercises.		

Knowledge assessment (max 100 points)			
Pre-exam tasks	**Points**	**Final exam**	**Points**
In-class activity		written exam	100
Practice classes		oral exam	
Mid-term tests			
Seminar papers			
Participants must also attend over 50% of the lecturing time to be eligible for course credit.			

Table 9. Syllabus 9: **Public Health Oriented Risk Analysis**

Study programme: Health and Safety

Course title: Public Health Oriented Risk Analysis

Lecturer: Snežana Jovanović

Course status: Elective

ECTS:

Requirement: /

Course aims

The course covers the main topics of health oriented risk analysis with different aspects of risks and terminology used in the field. The main part of the course is dedicated to the related actions used in overall analysis (assessment, perception, communication etc.), and illustration by multiple examples is provided.

Course outcomes

At the end of the course students are expected to have basic knowledge about general terms used in the area of risk, risk management and risk assessment; and respective methods used in this field of analysis.

Course content

Theory classes

1. Basics of Risk Analysis for Public Health 2. Basics of Risk Assessment for Public Health 3. Basics of Risk Management for Public Health 4. Risk Analysis in Perspective 5. Measures of Risk 6. Dose-Response Functions 7. Risk Perception and Communication 8. Variability and Uncertainty 9. Cumulative Risk Assessment 10. Relevant Public Health Law 11. Introduction to DALYs (Disability Adjusted Life Year) 12. How to calculate DALYs 13. Environmental Burden of Disease (EBD) 14. WHO Methodology for assessing EBD 15. Final exam

Practice classes

1. Risk Analysis in Public Health – Case study 2. Risk Assessment in Public Health – Case study 3. Risk Management in Public Health – Case study 4. Measures of Risk – Case study 1 5. Measures of Risk – Case study 2 6. Dose-Response Functions – Case study 1 7. Dose-Response Functions – Case study 2 8. Dose-Response Functions – Case study 3 9. Variability and Uncertainty – Case study 10. Cumulative Risk Assessment – Practical example 11. Calculating DALYs – Practical example 12. Application of DALYs in real-life scenarios 13. WHO Methodology for assessing EBD – Case study 1 14. WHO Methodology for assessing EBD – Case study 2 15. Preparation for final exam

Literature

1. List of literature including, but not limited to:

Night noise guidelines for Europe. Copenhagen, WHO Regional Office for Europe, 2009.

Kephalopoulos S et al., eds. Proceedings of the International Workshop on “Combined Environmental Exposure: Noise, Air Pollution, Chemicals”, Ispra, Italy, 15–16 January 2007.

Prüss-Üstün A et al. Introduction and methods: assessing the environmental burden of disease at national and local levels. Geneva, World Health Organization, 2003.

Prüss-Üstün A, Kay D, Fewtrell L, Bartram J (2003) Water, sanitation and hygiene. In: Ezzati M, Lopez AD, Rodgers A, Murray CJL, eds. Comparative quantification of health risks: global and

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<tr><td colspan="4">regional burden of disease due to selected major risk factors. Geneva, World Health Organization.
2. Transparencies to accompany each course unit.
3. Additional material, e.g. certification material and other relevant directives and documents.</td></tr>
<tr><td colspan="2">Number of active teaching classes: 13</td><td>Theory classes: 7</td><td>Practice classes: 6</td></tr>
<tr><td colspan="4">Teaching methods
The course includes an introductory note explaining aim and structure of the course and used methodology; lecturing illustrated by a number of examples; and review of main topics at the end of each lecturing unit.</td></tr>
<tr><td colspan="4">Knowledge assessment (max 100 points)</td></tr>
<tr><td>Pre-exam tasks</td><td>Points</td><td>Final exam</td><td>Points</td></tr>
<tr><td>In-class activity</td><td></td><td>written exam</td><td>100</td></tr>
<tr><td>Practice classes</td><td></td><td>oral exam</td><td></td></tr>
<tr><td>Mid-term tests</td><td></td><td></td><td></td></tr>
<tr><td>Seminar papers</td><td></td><td></td><td></td></tr>
<tr><td colspan="4">Participants must also attend over 50% of the lecturing time to be eligible for course credit.</td></tr>
</table>

Table 10. Syllabus 10: **Quantitative Risk Assessment and Advanced Applications, extension of Introduction to Risk Management**

Study programme: Quantitative Risk Assessment
Course title: Quantitative Risk Assessment and Advanced Applications, extension of Introduction to Risk Management
Lecturer: Jörg Bareiss, Giovanni Uguccioni
Course status: Elective
ECTS:
Requirement: /
Course aims The course presents an introduction to Quantitative Risk Analysis, thus illustrating the necessary steps for the calculation of risk indexes. A practical approach to frequency calculation and consequence assessment, including vulnerability models, will be discussed. A specific focus on domino effect and accidents triggered by Natural-Technological (Na-Tech) events will be presented.
Course outcomes The goal of the course is to give an introduction to Quantitative Risk Assessment and to introduce the participants to the analysis of risks originated outside the process boundary, i.e. due to external events, or more specifically: domino effects and Na-Tech accidents due to earthquakes, flooding, lightning. The participants will be introduced to the more accepted methodologies for chemical process risk analysis, with particular emphasis to the recent advancement on consequence analysis. A focus on the methods for the evaluation of domino effects will be presented, exemplifying the assessment of complex industrial layouts.
Course content *Theory classes* 1. Basic definitions 2. Risk indexes 3. Risk tolerability 4. Acceptability criteria 5. Selecting scenarios for risk calculation 6. Frequency and consequence assessment 7. Overview of risk calculation 8. Introduction to vulnerability models 9. Quantitative assessment of domino effect: introduction 10. Methods for evaluation of domino effects 11. Analysis of domino effect in complex industrial layouts 12. Assessment of industrial risk induced by natural events (Na-Tech) 13. Quantitative assessment in varying industrial contexts 14. Use of quantitative risk assessment results 15. Final exam *Practice classes* 1. Examples of basic definitions in use 2. Risk index examples 3. Applying concepts of risk tolerability 4. Scenario assessment and analysis 5. Frequency calculation 6. Simplified examples of risk calculation 7. Examples of assessing domino effect in quantitative assessment 8. Simplified examples of risk calculation as related to domino effect 9. Example of Na-Tech accident assessment: Earthquake 10. Example of Na-Tech accident assessment: Flooding 11.

Example of Na-Tech accident assessment: Lightning 12. Example of Na-Tech analysis methodologies for the EU project iNTeg-Risk 13. Case study: Simplified assessment of an Oil&Gas installation 14. Example of domino effect and Na-Tech implementation in risk assessment 15. Preparation for final exam			
Literature 1. Textbook: CCPS AIChe series on risk assessment (QRA, Consequence Analysis) 2. Transparencies to accompany each course unit. 3. Council Directive 96/82/EC on the control of major-accident hazards 4. Directive 2003/105/EC of the European Parliament and of the Council of 16 December 2003 amending Council Directive 96/82/EC.			
Number of active teaching classes: 13	**Theory classes:** 7	**Practice classes:** 6	
Teaching methods Teaching methods including lecturing, use of a case study for practical demonstration, and use of software tools for numerical calculations and mapping.			
Knowledge assessment (max 100 points)			
Pre-exam tasks	**Points**	**Final exam**	**Points**
In-class activity		written exam	100
Practice classes		oral exam	
Mid-term tests			
Seminar papers			
Participants must also attend over 50% of the lecturing time to be eligible for course credit.			

Table 11. Syllabus 11: **Health, Safety, Security and Environmental Risks**

Study programme: Health and Safety
Course title: Health, Safety, Security and Environmental Risks
Lecturer: Udo Weis, Giovanni Uguccioni
Course status: Elective
ECTS:
Requirement: /
Course aims The course gives an overview of EU regulation in the field of HSSE (Health, Safety, Security and Environment), explains the objectives and requirements, as well as the state-of-the art in the implementation including constraints and advantages. Special focus is on the Integrated Pollution Prevention and Control (IPPC) and Industrial Emission Directive (IED) and on the prevention of major accidents (Seveso).
Course outcomes At the end of the course a participant will: understand what is IPPC and IED and be familiar with the European Union regulatory framework for environmental management; know in details the concept and implementation of the Seveso Directive (Seveso II and III); the safety report, the major accident prevention policy (MAPP), the Safety Management System (SMS), Land-Use Planning (LUP) and Emergency Plans; understand the importance of human and security aspects when dealing with HSSE issues in industry; and know what are Safety (Key) Performance Indicators (SPIs or KPIs) and their use and interpretation.
Course content *Theory classes* 1. Mandatory environmental conditions for IPPC (Integrated pollution prevention and control) 2. Permit requirements and applications 3. BREF on Economics and Cross-Media 4. IPPC in relation to other instruments 5. Introduction to Life Cycle Assessment (LCA) 6. Concepts of major accident prevention 7. Risk assessment and safety report 8. Concepts of human and organizational factors 9. Control system and human performance 10. Security concept 11. Hazard analysis 12. Threat analysis 13. The concept of key performance indicators in the HSSE area 14. Leading and lagging indicators 15. Final exam *Practice classes* 1. The Seville Process to elaborate the BREFs (reference documents on Best Available Techniques) 2. Recent evolution: from IPPC Directive 2008/1/EC to Industrial Emission Directive 2010/75/EU 3. The role of LCA in the context of IPPC 4. Major Accident Prevention Policy (MAPP) 5. Safety Management System (SMS) 6. Land-Use Planning (LUP) 7. Implementation and further examples of accident prevention policy 8. Human factor analysis – Learning from experience 9. Integration in SMS 10. Good security practice 11. Security management 12. Definition, selection, aggregation, and calculation of indicators 13. Use of indicators and interpretation of the results 14. Case studies 15. Preparation for final exam

Literature

1. Textbook: HSE / HSSE: Health, Safety, Security and Environment, ver. 3, March 2009
2. Transparencies to accompany each course unit.
3. Additional material, e.g. certification material and other relevant directives and documents.

Number of active teaching classes: 13	**Theory classes:** 7	**Practice classes:** 6

Teaching methods

The course includes: an introductory note explaining aim and structure of the course, and used methodology as well; lecturing illustrated by number of examples; and a review of main topics in the end of each lecturing unit.

Knowledge assessment (max 100 points)

Pre-exam tasks	**Points**	**Final exam**	**Points**
In-class activity		written exam	100
Practice classes		oral exam	
Mid-term tests			
Seminar papers			

Participants must also attend over 50% of the lecturing time to be eligible for course credit.

Table 12. Syllabus 12: **Introduction to Risk Management**

Course title: Introduction to Risk Management
Lecturer: Piet Sellke
Course status: Elective
ECTS:
Requirement: /
Course aims The course covers the main topics of industrial safety, starting with different aspects of risks and terminology used in the field. The main part of the course is dedicated to the related EU directives and their application in industry. The course outlines goals, scope and required measures / obligations considering acute (e.g. accidents-related) and chronic (e.g. pollution-related) risks. Special attention is devoted to major accident prevention and related process safety risk assessment methodologies.
Course outcomes At the end of the course students are expected to have basic knowledge about: general terms used in the area of risk, safety, hazard, risk and risk assessment...; respective EU regulation/directives such as REACH, Seveso II, ATEX, and the obligations resulting from them; main elements of the process safety assessment (input data, hazards identification methods and tools, scenario elaboration and assessment of related risks…), including major accidents prevention policy; and safety measures, based on regulatory requirements, as implemented in the different EU member states.
Course content *Theory classes* 1. Different aspects of the term safety 2. Introduction to industrial safety issues 3. Historical overview of industrial accidents with hazardous substances 4. Major accident hazards 5. Societal response to major accidents 6. Seveso lower and upper tier establishment 7. Major Accident Prevention Policy (MAPP) - on all 7 demands 8. Safety Management System (SMS) – on all 7 demands 9. Emergency planning (internal/external) 10. Land use planning requirements 11. Roles of competent authorities (CAs) under Seveso II directive 12. Overview of the main steps for process safety risk assessment 13. Required site and surrounding data for process safety risk assessment 14. Relevant properties of the hazardous substances (including R and S phrases) 15. Final exam *Practice classes* 1. Understanding the EU REACH regulation 2. Occupational safety and health (including Atex, ADR and Seveso) 3. Lessons learned from infamous industrial accidents 4. Legislation introduced as a result of industrial accidents 5. Operational use of safety reports 6. Seveso II directive obligations on providing information to the public 7. Hazard identification methods and tools 8. Hazard classification approaches 9. Process safety risk assessment scenarios 10. Assessment of consequences in risk assessment 11. Applying modeling and evaluation approaches to assess consequences 12. Assessment of scenario likelihood 13. How to consider branching of events and

<table>
<tr><td colspan="4">safety measures 14. Case studies 15. Preparation for final exam</td></tr>
<tr><td colspan="4">Literature
1. Textbook: Introduction to Risk and Safety Management in Industry, Version 2, September, 2009
2. Transparencies to accompany each course unit.
3. Additional material, e.g. certification material and other relevant directives and documents.</td></tr>
<tr><td>Number of active teaching classes: 13</td><td colspan="2">Theory classes: 7</td><td>Practice classes: 6</td></tr>
<tr><td colspan="4">Teaching methods
The course is illustrated by number of examples, presents commonly used methods and tools, and provides exercises and preparation for the final exam.</td></tr>
<tr><td colspan="4">Knowledge assessment (max 100 points)</td></tr>
<tr><td>Pre-exam tasks</td><td>Points</td><td>Final exam</td><td>Points</td></tr>
<tr><td>In-class activity</td><td></td><td>written exam</td><td>100</td></tr>
<tr><td>Practice classes</td><td></td><td>oral exam</td><td></td></tr>
<tr><td>Mid-term tests</td><td></td><td></td><td></td></tr>
<tr><td>Seminar papers</td><td></td><td></td><td></td></tr>
<tr><td colspan="4">Participants must also attend over 50% of the lecturing time to be eligible for course credit.</td></tr>
</table>

Table 14. Syllabus 13: **Business Communication and Management of Intercultural Differences**

Study programme: Introduction - Risk Management in Industry
Course title: Business Communication and Management of Intercultural Differences
Lecturer: Aleksandar Jovanović
Course status: Elective
ECTS:
Requirement: /
Course aims In the times of ever increasing globalization, cultural differences and multilingual issues play an important role in the area of business communication which can easily fail on apparently banal issues. This could be of particular importance also in collaborative international projects. A cognitive approach toward cultural and national differences will be used throughout the training.
Course outcomes The purpose of this course is to ensure that engineers, managers and IT experts can understand the importance of these aspects for the success of their collaboration with partners from other cultural background.
Course content *Theory classes* 1. Intercultural value systems 2. Differences in cultural practices 3. Managing cultural differences 4. Cross-cultural project management 5. Individualism 6. Teamwork 7. Working in an international atmosphere 8. Essentials of business communication 9. Elements of business ethics 10. Human Resources Management 11. Background on EU projects 12. EU project collaboration and management 13. Multicultural business etiquette techniques 14. Navigating multilingual environments 15. Final exam *Practice classes* 1. Multicultural contexts – what you should know, what you should do, what you should not do 2. Applying management of cultural differences toward ensuring successful projects 3. Applying business etiquette techniques across cultures 4. Multilingual environments: preventing miscommunication 5. Managing cultural differences in risk engineering projects 6. Managing cultural differences in risk management projects 7. Managing cultural differences in IT projects 8. Managing cultural differences in other projects 9. What one should know, do or not do in an EU projects 10. Case study: United States 11. Case study: Japan 12. Case study: India 13. Case study: China 14. Case study: Other international contexts 15. Preparation for final exam
Literature 1. Texts including: Hall, Edward, T. (1959). The silent language. 1st edn, Anchor Books, New York, USA. ISBN: 0385055498

Hall, Edward, T. (1976). Beyond culture. 1st edn, Anchor Books, New York, USA. ISBN: 9780385124744

Hofstede, Geert & Hofstede, Gert, J. (2005). Cultures and organizations: software of the mind. 2nd edn, McGraw Hill, USA. ISBN: 9780071439596

House, Robert, J. [et al]. (2004). Culture, leadership, and organizations: The GLOBE study of 62 societies. 1st edn, Sage Publications, California, USA. ISBN: 9780761924012

Morrosion, Terry & Conaway, Wayne, A. (2006). Kiss, bow or shake hands. 2nd edn, Adams Media, Avon, Massachusetts, USA. ISBN: 1593373686

2. Transparencies to accompany each course unit.

3. Additional material, e.g. certification material and other relevant directives and documents.

Number of active teaching classes: 7	**Theory classes:** 4	**Practice classes:** 3

Teaching methods

This course will focus on interaction with attendees and require their active participation. It will incorporate lectures, review and discussion of the daily material. Lectures notes and transparencies will be provided.

Knowledge assessment (max 100 points)

Pre-exam tasks	**Points**	**Final exam**	**Points**
In-class activity		written exam	100
Practice classes		oral exam	
Mid-term tests			
Seminar papers			

Participants must also attend over 50% of the lecturing time to be eligible for course credit.

The Main School of Fire Service, Poland

1. Critical communications in crisis operations
2. Modelling of threats and Risk Management in the Crisis Management process
3. UAVO simulator course

Table 14. Syllabus 14: **Critical communications in crisis operations**

Study programme:
Course title: Critical communications in crisis operations
Lecturer:
Course status:
ECTS: 3
Requirement: Basic (high-school) knowledge of physics and fundamental knowledge of electromagnetism.
Course aims: Acquisition of skills and basic knowledge of organization of critical communications in crisis operations by students.
Course outcomes Graduates of the course: Will acquire basic technical knowledge of analogue and digital radiocommunication systems operating in conventional and trunked modes and will recognize differences between radio-technologies. Will acquire knowledge of: sets of services offered in different radiocommunication technologies; usage of undermined technology by rescue and public safety services; rules determining working ways of professional users. Will become competent in use of radiocommunication devices and dispatch software. Will gain ability of faster learning to operate new equipment and dispatch software in the future. Will acquire basic knowledge and ability of preparation communications plans and reports for real rescue actions and exercises of public safety and rescue services.
Theory classes 1 - Examination rules, schedule of work. 2 - Basic technical knowledge of analogue radiocommunication systems (RS) 3 – Basic technical knowledge of digital RS. 4 - Operation in conventional modes. 5 - Operation in trunked modes. 6 - Differences between radio-technologies. 7 - Sets of services offered in different radiocommunication technologies. 8 - Usage of radiocommunication technologies by rescue and public safety services (conventional); 9 - Usage of radiocommunication technologies by rescue and public safety services (trunked). 10 – Radio voice signals. 11 - Rules determining working ways of professional users. 12 – Symbol in preperation communications plans. 13 - Rules of preperation communications plans for the rescue operations. 14,15 – exam. *Practice classes* 1 – Basic regulation of work during practice classes, examination rules. 2-3 - Preparation of communications plans using scenario based on real rescue actions. 4-5 – Planing of radiocommunications in advance. 6 - 7 - Examiniation of services in digital radiocommunication system. 8-9 - Programming of analogue devices. 10-11 - Programming of digital devices in DMR standard. 12-13 - Programming of digital devices in NXDN standard (part 1). 14 - 15 - Programming of digital devices in NXDN standard (part 2).
Literature **Magazines:**

1. KEY TOUCH http://www.keytouch.info
2. RADIO RESOURCE http://www.radioresourcemag.com/
3. MISSION CRITICAL COMMUNICATIONS http://www.mccmag.com/
4. TAITCONNECTIONS http://magazine.taitconnection.com/
5. TETRA TODAY http://www.tetratoday.com

Books:

1. John Dunlop, Demessie Girma, James Irvine; Digital Mobile Communications and the TETRA System, 1999; ISBN: 978-0-471-98792-5, pages: 468
2. Kimmo Heikkonen, Tero Pesonen, Tiina Saaristo; You and Your TETRA RadioTETRA as a Tool for Public Safety!; IT Press, Edita Publishing Ltd 2004; ISBN: 951-826-770-7; pages: 100

Web sides:

1. http://dmrassociation.org
2. http://www.kenwoodcommunications.co.uk
3. http://www.dpmr-mou.org
4. http://www.project25.org
5. http://www.tetra-applications.com/
6. http://www.nxdn-forum.com/
7. http://www.firstresponder.gov

Number of active teaching classes: 30	**Theory classes: 15**	**Practice classes: 15**

Teaching methods

Own prepared materials will be used to presenting, assumed in the course, range of knowledge. Carrying out the simulation of the real rescue action will be done for preparation of communications plans.

Knowledge assessment (max 100 points)

written exam (40), practical exam based on excecise reports (60)

Knowledge testing method is based on written exam and effectiveness of usage of this knowledge in practical training.

Table 15. Syllabus 15: **Modelling of threats and Risk Management in the Crisis Management process**

Study programme:
Course title: Modeling of threats and Risk Management in the Crisis Management process
Lecturer: ...
Course status: ...
ECTS: 4
Requirement: Knowledge of basic probability and statistic theory and skills to solve simple mathematical hazards models.
Course aims: Introducing students to application of risk assessment and risk management in crisis management as well as with the possibilities of using statistical and metamatical/physical models in safety and security science.
Course outcomes Students should have an ability and skills to assess the risk both qualitatively and quantitatively. They should have skills to estimate consequences scale of developing threats and to count values of probability of occurrence such consequences. Risk Matrix and Crisis Situation Matrix both of them students should be able to construct. Students receive skills to use simple qualitative and quantitative risk analysis methods in practice. Additionally students have the ability to work in a group, use the available data in threat and risk modeling, and create statistical models.
Course content *Theory classes* 1 - Examination rules, schedule of work. 2 - Risk definition. Probability space. Probability axioms. Random variables. 3 - Probability distributions - Normal distribution, Poisson distribution and Exponential distribution. 4 - Basic sets theory. 5 - Modelling theory, tools and methods. 6 - Statistical models in safety and security modelling. 7 - Mathematical/physical models of threats. 8 - Unwanted events space. 9 - Qualitative and quantitative risk analysis. Risk management. 10 - Examples of risk analysis methods: Risk Matrix, Crisis Situation Matrix, 11 - Examples of risk analysis methods: Event Tree, Fault Tree, 12 - Examples of risk analysis methods: Bow-Tie Method, Risk Score, F-N Curve. 13 - Crisis Management process. Introduction to decision making in the Crisis Management. 14,15 – Exam. *Practice classes* 1 – Basic regulation of work during practice classes, examination rules 2-4 - Scenarios analysis. Fault and event trees (Bow-Tie analysis). 5 - Effectiveness of systemic barriers. 6-7 - Risk Matrix and Crisis Situation Matrix. 8-9 - FN- Curve examples. 10-14 - Statistical models of threats (examples of computer programs). 15 – Exam.
Literature 1. Risk Analysis. A quantitative guide,. David Vose (third edition) John &Sons, Ltd 2008.

2. The book of risk. Dan Borge, John &Sons, Ltd. 2001
3. Risk Analysis in Building Fire Safety Engineering, A. M. Hasofer. Elsevier Ltd. 2007.
4. Seeing Tomorrow – Rewriting the Rules of Risk. Dembo R.S. Freeman W.J. John &Sons, Ltd. 1998. New York.
5. "Risk Assessment – Recommended Practices for Municipalities and Industry", Canadian Society for Chemical Engineering, 2004.
6. "Hazard Identification and evaluation in a local community", Technical Report No 12, United Nations Environment Programme: Industry and Environment, 1998.
7. Theory of Modelling and Simulation, Bernard Zeigler Tag Kim Herbert Praehofer, Academic Press, 2000.
8. Statistical Models: Theory and Practice, David A. Freedman, Cambridge University press, 2009.
9. Modelling the Environment, Second Edition, Andrew Ford, Island Press, 2009.
10. Fire Dynamics Simulator, Technical Reference Guide, NIST Special Publication 1018-1, 6th Edit., 2017.
11. Risk Analysis in Building Fire Safety Engineering, A. M. Hasofer. Elsevier Ltd. 2007.

Number of active teaching classes: 26	**Theory classes: 12**	**Practice classes: 14**

Teaching methods

Teaching is mainly based on theory classes. In these classes some theory knowledge will be presented (mainly: definitions, concepts, modeling theory, equations, tools, methods, modeling techniques, model classification).. Discussion with students on many issues will be conducted. During practical classes examples how to use certain risk analysis methods will be presented with addiditon of threat modeling simulation software..

Knowledge assessment (max 100 points)

Written test (100%)

Table 16. Syllabus 16: **UAVO simulator course**

Study programme:		
Course title: UAVO simulator course		
Lecturer:		
Course status:		
ECTS: 3		
Requirement: Knowledge of physics and atmosphere construction		
Course aims Introducing students to operate and make safe UAV flights in practice.		
Course outcomes Upon completion, students should be capable to carry out the take-off and landing procedure and perform specific maneuvers. In addition, they should be able to fly in a variable orientation relative to the operator. Students as operators should be able to react to various weather conditions.		
Course content *Theory classes* 1 - Examination rules, schedule of work. 2 – The concept of drones usage 3 - The concept of a specialist rescue reconnaissance team. 4 - Cooperation specialist rescue reconnaissance team with rescue and public safety services. 5 - National solutions usage of drones. 6 - Global trends usage of drons 7 - Theoretical UAV flight rules 8 - Basic law regulations usage of drones. 9 - Man as a UAV pilot and operator - possibilities and limitations 10 - The use of drones in rescue and maintaining public safety 11 - Construction and operation of UAVs, 12 - Basic rules usage of drones 13 - Flight safety and hazardous situations 14,15 – Exam. *Practice classes* 1 – Basic regulation of work during practice classes, examination rules. 2 - 3 – Introduction of usage a simulator infrastructure. 4 - 7 - Traning of basic operations in GPS mode and ATTI mode in several steps with different difficulty level. 8-10 - Operation in hard weather condition (strong wind, rain, snow, fog). 11-13 - Procedures of operation in emergency situations (unexpected failure of drone). 14,15 – Exam.		
Literature 1. Terry Kilby, Belinda Kilby, *Getting Started with Drones,* Maker Media, 2015. 2. Adam Juniper, *The Complete Guide to Drones*, Wellfleet Press, 2016.		
Number of active teaching classes: 30	**Theory classes: 15**	**Practice classes: 15**
Teaching methods Some introduction to every aspect of operations on simulator infrastructure will be given. Training on simulator infrastructure in different conditions will be conducted. Mainly: Control apparatus, various models of unmanned aerial vehicles. Safety rules during the flight.		

Preparation for the flight. Compass calibration. Starting procedures. Maintaining a fixed position in space. Basic maneuvers. Avoiding obstacles. Emergency situations. Flights in the variable orientation of the platform relative to the operator. Behavior in various weather conditions. Safe landing.
Knowledge assessment (max 100 points)
written exam (40), practical exam (60)
Knowledge testing method is based on written exam and effectiveness of usage of this knowledge in simulation training.

Ionian University, Greece

1. Data Mining and decision making tools
2. Environmental disaster and crisis management strategies

Table 17. Syllabus 17: **Data Mining and decision making tools**

Study program: Security studies		
Course title: Data Mining and decision-making tools		
Lecturer: Themis Exarchos		
Course status: Elective		
ECTS: 6		
Requirement: /		
Course aims To provide theory and practice of the data analytics and decision making. To give to the students the full path from data acquisition, to pre-processing, pattern extraction and finally decision making.		
Course outcomes Training students for successfully performing activities in the domain of data mining and decision making in different data domains		
Course content *Theory classes* 1. Sources of data 2. Data pre-processing 3. Data curation 4. Data sharing 5. Ontologies and standards 6. Data harmonization 7. Cloud infrastructure and architectures 8. Data analytics algorithms I 9. Data analytics algorithms II 10. Decision making 11. Evaluation and validation procedures, I 12. Evaluation and validation procedures 13. Results reporting 14. Case studies. *Practice classes* 1. Introduction to data analytics software 2. Visual analytics 3. Data pre-processing 4. Unsupervised filters 5. Supervised filters, 6. Feature Ranking 7. Feature selection 8. Classification algorithms I 9. Classification algorithms II 10. Clustering algorithms 11. Association rule mining algorithms 12. Evaluation metrics 13. Results presentation 14. Case studies I 15. Case studies II.		
Literature Introduction to Data Mining, Pang-Ning Tan; Michael Steinbach; Anuj Karpatne; Vipin Kumar, Pearson, Print ISBN: 9780133128901, 0133128903, eText ISBN: 9780134080284, 0134080289, Edition: 2nd, Copyright year: 2019 1. Eibe Frank, Mark A. Hall, and Ian H. Witten (2016). The WEKA Workbench. Online Appendix for "Data Mining: Practical Machine Learning Tools and Techniques", Morgan Kaufmann, Fourth Edition, 2016.		
Number of active teaching classes: 7	**Theory classes:** 4	**Practice classes:** 3
Teaching methods Teaching is conducted through theory and practice classes. Practice classes are auditory and practical, and they solve tasks from individual chapters, provide additional explanations and examples to elaborate specific areas of the lectures. During the realization of the course, the student is obliged to do the planned practices. Knowledge assessment takes place through two mid-term tests. The condition for the final exam is that the		

<table>
<tr><td colspan="4">student passes both mid-term tests and successfully realizes practical classes. The final exam consists of an oral exam. Teaching will be modified and adjusted depending on the basic study previously completed by student.</td></tr>
<tr><td colspan="4">Knowledge assessment (max 100 points)</td></tr>
<tr><td>Pre-exam tasks</td><td>Points</td><td>Final exam</td><td>Points</td></tr>
<tr><td>In-class activity</td><td>10</td><td>written exam</td><td></td></tr>
<tr><td>Practice classes</td><td></td><td>oral exam</td><td>30</td></tr>
<tr><td>Mid-term tests</td><td>30</td><td></td><td></td></tr>
<tr><td>Seminar papers</td><td>30</td><td></td><td></td></tr>
<tr><td colspan="4">The above listed knowledge assessment means are just a few among different options (written exam, oral exam, project presentation, seminar papers etc.).</td></tr>
</table>

Table 18. Syllabus 18: **Environmental disaster and crisis management strategies**

Study programme: Security studies
Course title: Environmental disaster and crisis management strategies
Lecturer: Michalis Diakakis, Spyridon Mavroulis
Course status: Elective
ECTS: 6
Requirement: /
Course aims Acquiring knowledge in the field of natural disaster management. Introducing students to the various natural hazards types, risk assessment and approaches of crisis management.
Course outcomes Training students for improving their knowledge on risk types and assessment and learn approaches and practices of crisis management
Course content *Theory classes* 1. Introduction to the theory of disaster and crisis management: Disasters and Crisis: Basic Concepts, Disaster types and classification, Natural Disasters, Human crises. 2. Risk: Global dimensions and effects of Disasters, Hazard, Vulnerability, Risk. Disaster Management: Cycle of Disaster Management, Crisis and emergency management 3. Geophysical hazards: Landslide phenomena (mass movement): Types of landslides, Causes of occurrence, Dealing with landslides and other mass movement phenomena. Earthquakes: Cause and Seismic Distribution, Seismic Phenomena, The Great Earthquake of Japan in 2011. 4. Volcanoes: Description, Distribution and Classification of Volcanoes, Volcanic risk, Volcanos of East Mediterranean. 5. Hydro-meteorological and climate –related disasters and climate change: Extreme Weather Phenomena: Tornados, Heat, Thunderstorms, Floods-Extreme Rainfall, Frost. Desertification: 6. Climate Change: Causes of the Greenhouse effect, Climate Change Impacts, International Treaties, 7. Impacts on transportation. 8. State of art technology and new tools in disaster management: Phases of disaster research. Environmental research and monitoring. Risk and vulnerability analysis, risk mitigation and preparedness. Risk and disaster information technology. Collection and processing of data. 9. Early warning and recognition, response to emergency and rapid recovery. Communications and Connectivity, GIS, remote sensing, unmanned aerial vehicles and other methodologies. 10. Emergency planning & management: Planning evacuation, forest fire risk maps, flood risk analysis, human vulnerability and mortality parameters. 11. Introduction to the EU civil protection structure: Institutional Bodies, Policy Making and Decision-Making Process. Security Concepts and the EU's International Role. 12. Crisis Management and Disaster Management by the EU. UN and Crisis and Disaster Management. 13. Disaster and crisis management at local, national and international level: Introductory Concepts, Definitions. Disaster Management and Crisis Management Systems, Disaster and Crisis Management. 14. Management at National and Local Level. *Practices classes*

1. Introduction to GIS and basic functions, 2. GIS and earthquakes, 3. GIS and floods, 4. GIS and mass movement phenomena, 5. GIS and forest fires, 6. GIS and other hazards. 7. GIS and resource allocation. 8. Collection and process of data, 9. Post-disaster fieldwork approach, 10. Risk perception research, 11. Use of unmanned aerial vehicles for post-disaster fieldwork (presentation and interactive questions), 12. Identifying impacts on transportation, 13. Examining the temporal and spatial distribution of disasters, 14. Examining historical catalogues of disasters.

Literature

1. Alexander, D. (1991). Natural disasters: a framework for research and teaching. Disasters, 15(3), 209-226.

Number of active teaching classes: 7	**Theory classes:** 4	**Practice classes:** 3

Teaching methods

Teaching is conducted through theory and practice classes. Practice classes are auditory and practical, and they solve tasks from individual chapters, provide additional explanations and examples to elaborate specific areas of the lectures.-During the realization of the course, the student is obliged to do the planned practices. Knowledge assessment takes place through two mid-term tests. The condition for the final exam is that the student passes both mid-term tests and successfully realizes practical classes. The final exam consists of an oral exam. Teaching will be modified and adjusted depending on the basic study previously completed by student.

Knowledge assessment (max 100 points)

Pre-exam tasks	**Points**	**Final exam**	**Points**
In-class activity	10	written exam	
Practice classes		oral exam	30
Mid-term tests	30		
Seminar papers	30		

The above listed knowledge assessment means are just a few among different options (written exam, oral exam, project presentation, seminar papers etc.).