ΔΗΜΟΚΡΙΤΕΙΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΡΑΚΗΣ
DEMOCRITUS UNIVERSITY OF THRACE

ΔΗΜΟΚΡΙΤΕΙΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΡΑΚΗΣ

ΤΜΗΜΑ ΠΟΛΙΤΙΚΩΝ ΜΗΧΑΝΙΚΩΝ

ΠΜΣ «ΠΡΟΛΗΨΗ ΚΑΙ ΔΙΑΧΕΙΡΙΣΗ ΚΡΙΣΕΩΝ & ΚΑΤΑΣΤΡΟΦΩΝ: ΚΑΙΝΟΤΟΜΕΣ ΤΕΧΝΙΚΕΣ ΣΤΗΝ ΠΟΛΙΤΙΚΗ ΠΡΟΣΤΑΣΙΑ»

A9.
COURCES OUTLINES

2025

1st Semester

COURSE OUTLINE BASIC PRINCIPLES OF CIVIL PROTECTION AND DISASTER MANAGEMENT

1. GENERAL

SCHOOL	SCHOOL OF ENGINEERING		
DEPARTMENT	PREVENTION AND MANAGEMENT OF CRISIS AND DISASTERS: INNOVATIVE TECHNIQUES IN CIVIL PROTECTION		
LEVEL OF STUDIES	ISCED level 7 – Master's or equivalent level		
COURSE CODE	CP01	**SEMESTER**	1th Semester
COURSE TITLE	Basic Principles of Civil Protection and Disaster Management		

TEACHING ACTIVITIES *If the ECTS Credits are distributed in distinct parts of the course e.g. lectures, labs etc. If the ECTS Credits are awarded to the whole course, then please indicate the teaching hours per week and the corresponding ECTS Credits.*	**TEACHING HOURS PER WEEK**	**ECTS CREDITS**
	3.0	6.0
Please, add lines if necessary. Teaching methods and organization of the course are described in section 4.		

COURSE TYPE *Background, General Knowledge, Scientific Area, Skill Development*	Scientific Area
PREREQUISITES:	NO
TEACHING & EXAMINATION LANGUAGE:	Greek, English
COURSE OFFERED TO ERASMUS STUDENTS:	YES
COURSE URL:	https://eclass.duth.gr/courses/

2. LEARNING OUTCOMES

Learning Outcomes

Please describe the learning outcomes of the course: Knowledge, skills and abilities acquired after the successful completion of the course.

At the end of the course, the student should be able to:

- *Understand the basic principles and legal framework of civil protection at national, European, and international levels.*
- *Recognize major natural, technological, and human-induced hazards and their impacts on society and the environment.*
- *Familiarize with the processes of planning and implementing risk and disaster management strategies.*
- *Develop decision-making skills in critical situations, considering scientific data and operational needs.*
- *Apply modern methodologies and technologies for disaster monitoring, prevention,*

and response (GIS, early warning systems, risk modeling).
- *Collaborate effectively in interdisciplinary and international environments, contributing to the planning and implementation of civil protection plans.*
- *Demonstrate social, ethical, and professional responsibility in crisis management and emergency situations.*
- *Analyze and evaluate real disaster cases, deriving useful conclusions for improving policies and response measures.*

General Skills

Name the desirable general skills upon successful completion of the module

Search, analysis and synthesis of data and information,	*Project design and management*
ICT Use	*Equity and Inclusion*
Adaptation to new situations	*Respect for the natural environment*
Decision making	*Sustainability*
Autonomous work	*Demonstration of social, professional and moral responsibility and sensitivity to gender issues*
Teamwork	*Critical thinking*
Working in an international environment	*Promoting free, creative and inductive reasoning*
Working in an interdisciplinary environment	
Production of new research ideas	

- Search, analyze, and synthesize data and information using appropriate technologies.
- Adaptation to new situations.
- Decision-making.
- Independent work.
- Teamwork.
- Working in an international environment.
- Working in an interdisciplinary environment.
- Generating new research ideas.
- Project design and management.
- Respect for diversity and multiculturalism.
- Respect for the natural environment.
- Demonstrating social, professional, and ethical responsibility and sensitivity on gender issues.
- Critical and self-critical thinking.
- Promoting free, creative, and inductive thinking.

3. COURSE CONTENT

The course aims to provide participants with the necessary knowledge and skills to understand, analyze, and effectively manage disasters, as well as implement strategies for prevention, preparedness, response, and recovery in emergency situations.

Main objectives:

- ***Education and Awareness:*** *Raise awareness on the importance of civil protection and the need for prevention and preparedness against natural, technological, and human-induced disasters.*
- ***Crisis Management Skills Development:*** *Prepare participants for effective crisis management during disasters by implementing operational plans and coordinating responsible agencies and services.*

- ***Understanding Legal and International Regulations:*** *Explain the legal framework governing civil protection and international cooperation in disaster response and assistance.*
- ***Application of Innovative Technologies:*** *Highlight the significance of using new technologies (such as GIS, satellite imagery, drones, etc.) in disaster management and monitoring natural phenomena.*
- ***Development of Recovery Strategies:*** *Equip participants with knowledge on restoring affected areas and supporting impacted communities after disasters.*
- ***Building Partnerships and Networks:*** *Strengthen the need for collaboration with international organizations, NGOs, and other entities involved in civil protection and humanitarian aid.*

Indicative course topics:

- *Introduction to Civil Protection*
- *Categories of Disasters and Hazards*
- *Prevention and Preparedness*
- *Crisis Response and Management*
- *Recovery and Evaluation*
- *Volunteering and Social Participation*
- *New Technologies in Civil Protection*
- *International Cooperation in Civil Protection*

4. LEARNING & TEACHING METHODS - EVALUATION

TEACHING METHOD *Face to face, Distance learning, etc.*	Face to face
USE OF INFORMATION & COMMUNICATIONS TECHNOLOGY (ICT) *Use of ICT in Teaching, in Laboratory Education, in Communication with students*	Use of ICT in Teaching Use of ICT in Communication with students
TEACHING ORGANIZATION *The ways and methods of teaching are described in detail.* *Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliographic research & analysis, Tutoring, Internship (Placement), Clinical Exercise, Art Workshop, Interactive learning, Study visits, Study / creation, project, creation, project. Etc.* *The supervised and unsupervised workload per activity is indicated here, so that total workload per semester complies to ECTS standards.*	

Activity	***Workload/semester***
Lectures	39
Assignments	60
Study and analysis of literature	78
Exams	3
Total	**180**

STUDENT EVALUATION *Description of the evaluation process* *Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Essay / Report, Oral Exam, Presentation in audience, Laboratory Report, Clinical examination of a patient, Artistic interpretation, Other/Others* *Please indicate all relevant information about the course assessment and how students are informed*	Student evaluation languages Greek English Method (Formative or Concluding) Summative Student evaluation methods Written Exams towards Solving a Problem 50% Relative use case compilation 50%

5. SUGGESTED BIBLIOGRAPHY

- Introduction to International Disaster Management – Damon P. Coppola
- Disaster Policy and Politics: Emergency Management and Homeland Security – Richard T. Sylves
- The Disaster Recovery Handbook: A Step-by-Step Plan to Ensure Business Continuity and Protect Vital Operations, Facilities, and Assets – Michael Wallace & Lawrence Webber
- Union Civil Protection Mechanism (UCPM)
- Use cases for Civil Protection. Manual Guide, Project RESISTANT (DG ECHO)

COURSE OUTLINE NATURAL AND TECHNOLOGICAL RISKS IN THE ERA OF CLIMATE CRISIS

1. GENERAL

SCHOOL	SCHOOL OF ENGINEERING		
DEPARTMENT	PREVENTION AND MANAGEMENT OF CRISIS AND DISASTERS: INNOVATIVE TECHNIQUES IN CIVIL PROTECTION		
LEVEL OF STUDIES	ISCED level 7 – Master's or equivalent level		
COURSE CODE	CP02	**SEMESTER**	1th Semester
COURSE TITLE	Natural and Technological Risks in the era of Climate Crisis		

TEACHING ACTIVITIES *If the ECTS Credits are distributed in distinct parts of the course e.g. lectures, labs etc. If the ECTS Credits are awarded to the whole course, then please indicate the teaching hours per week and the corresponding ECTS Credits.*	**TEACHING HOURS PER WEEK**	**ECTS CREDITS**
	3.0	6.0
Please, add lines if necessary. Teaching methods and organization of the course are described in section 4.		

COURSE TYPE *Background, General Knowledge, Scientific Area, Skill Development*	Scientific Area
PREREQUISITES:	NO
TEACHING & EXAMINATION LANGUAGE:	Greek, English
COURSE OFFERED TO ERASMUS STUDENTS:	YES
COURSE URL:	https://eclass.duth.gr/courses/

2. LEARNING OUTCOMES

Learning Outcomes

Please describe the learning outcomes of the course: Knowledge, skills and abilities acquired after the successful completion of the course.

At the end of the course, the student should be able to:

- *Identify and understand the various types of natural and technological hazards, as well as their underlying causes and mechanisms.*
- *Analyze the impacts of the climate crisis on the intensity and frequency of these hazards.*
- *Evaluate the consequences of hazards on human society and the natural environment.*
- *Apply disaster prevention and management methods, considering the contemporary challenges of the climate crisis.*
- *Utilize modern technologies and tools for monitoring and addressing natural and technological hazards.*

- *Develop adaptation strategies to changing environmental conditions, aiming to reduce community vulnerability.*
- *Collaborate effectively in interdisciplinary teams to solve problems related to hazards and disasters.*
- *Develop critical thinking regarding the policies and measures implemented to address hazards within the context of the climate crisis.*

General Skills

Name the desirable general skills upon successful completion of the module

Search, analysis and synthesis of data and information,	*Project design and management*
ICT Use	*Equity and Inclusion*
Adaptation to new situations	*Respect for the natural environment*
Decision making	*Sustainability*
Autonomous work	*Demonstration of social, professional and moral responsibility and sensitivity to gender issues*
Teamwork	*Critical thinking*
Working in an international environment	*Promoting free, creative and inductive reasoning*
Working in an interdisciplinary environment	
Production of new research ideas	

- Search, analyze, and synthesize data and information using appropriate technologies.
- Adaptation to new situations.
- Decision-making.
- Independent work.
- Teamwork.
- Working in an international environment.
- Working in an interdisciplinary environment.
- Project design and management.
- Respect for diversity and multiculturalism.

3. COURSE CONTENT

The purpose of the course is to provide students with the necessary knowledge and skills to understand, analyze, and manage natural and technological hazards, taking into account the contemporary challenges arising from the climate crisis.

More specifically, the course aims to:

- *Develop an understanding of natural and technological hazards, as well as the mechanisms that cause them.*
- *Analyze the impacts of climate change on the frequency and intensity of disastrous events.*
- *Develop strategies for prevention, preparedness, response, and recovery in the face of hazards, with an emphasis on sustainability and reducing societal vulnerability.*
- *Utilize modern technologies (such as GIS, satellite data, and predictive models) for hazard monitoring and management.*
- *Familiarize students with the regulatory framework and disaster management policies at the national, European, and international levels.*
- *Enhance critical thinking and decision-making skills, enabling students to evaluate and implement appropriate hazard management strategies.*

- *Foster collaboration in interdisciplinary and international environments, strengthening teamwork and coordinated action in crisis situations.*

4. LEARNING & TEACHING METHODS - EVALUATION

TEACHING METHOD *Face to face, Distance learning, etc.*	Face to face
USE OF INFORMATION & COMMUNICATIONS TECHNOLOGY (ICT) *Use of ICT in Teaching, in Laboratory Education, in Communication with students*	Use of ICT in Teaching Use of ICT in Communication with students
TEACHING ORGANIZATION *The ways and methods of teaching are described in detail.* *Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliographic research & analysis, Tutoring, Internship (Placement), Clinical Exercise, Art Workshop, Interactive learning, Study visits, Study / creation, project, creation, project. Etc.* *The supervised and unsupervised workload per activity is indicated here, so that total workload per semester complies to ECTS standards.*	

Activity	***Workload/semester***
Lectures	39
Assignments	60
Study and analysis of literature	78
Exams	3
Total	**180**

STUDENT EVALUATION *Description of the evaluation process* *Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Essay / Report, Oral Exam, Presentation in audience, Laboratory Report, Clinical examination of a patient, Artistic interpretation, Other/Others* *Please indicate all relevant information about the course assessment and how students are informed*	Student evaluation languages Greek English Method (Formative or Concluding) Summative Student evaluation methods Written Exams towards Solving a Problem 50% Relative use case compilation 50%

5. SUGGESTED BIBLIOGRAPHY

- Natural Hazards: Earth's Processes as Hazards, Disasters, and Catastrophes, Edward A. Keller και Duane E. DeVecchio
- Climate Change and Natural Disasters: Transforming Economies and Policies for a Sustainable Future, Vinod Thomas
- The Climate Crisis: An Introductory Guide to Climate Change, David Archer και Stefan Rahmstorf
- Use cases for Civil Protection. Manual Guide, Project RESISTANT (DG ECHO)

COURSE OUTLINE

RISK AND VULNERABILITY ANALYSIS AND ASSESSMENT

1. GENERAL

SCHOOL	SCHOOL OF ENGINEERING		
DEPARTMENT	PREVENTION AND MANAGEMENT OF CRISIS AND DISASTERS: INNOVATIVE TECHNIQUES IN CIVIL PROTECTION		
LEVEL OF STUDIES	ISCED level 7 – Master's or equivalent level		
COURSE CODE	CP03	**SEMESTER**	1st Semester
COURSE TITLE	Risk and Vulnerability Analysis and Assessment		

TEACHING ACTIVITIES *If the ECTS Credits are distributed in distinct parts of the course e.g. lectures, labs etc. If the ECTS Credits are awarded to the whole course, then please indicate the teaching hours per week and the corresponding ECTS Credits.*	**TEACHING HOURS PER WEEK**	**ECTS CREDITS**
	3.0	6.0
Please, add lines if necessary. Teaching methods and organization of the course are described in section 4.		

COURSE TYPE *Background, General Knowledge, Scientific Area, Skill Development*	Scientific Area
PREREQUISITES:	NO
TEACHING & EXAMINATION LANGUAGE:	Greek, English
COURSE OFFERED TO ERASMUS STUDENTS:	YES
COURSE URL:	https://eclass.duth.gr/courses/

2. LEARNING OUTCOMES

Learning Outcomes

Please describe the learning outcomes of the course: Knowledge, skills and abilities acquired after the successful completion of the course.

At the end of the course the student will be able to:

- Identify and categorize types of hazards and vulnerabilities.
- Apply risk and vulnerability assessment methodologies to various systems.
- Design risk mitigation strategies and resilience enhancement plans.
- Use tools and techniques for hazard simulation and modeling

General Skills

Name the desirable general skills upon successful completion of the module

Search, analysis and synthesis of data and information,
ICT Use
Adaptation to new situations
Decision making
Autonomous work
Teamwork
Working in an international environment
Working in an interdisciplinary environment
Production of new research ideas
Project design and management
Equity and Inclusion
Respect for the natural environment
Sustainability
Demonstration of social, professional and moral responsibility and sensitivity to gender issues
Critical thinking
Promoting free, creative and inductive reasoning

Adaptation to new situations
Decision making
Working in an interdisciplinary environment
Project design and management
Respect for the natural environment

Promoting free, creative and inductive reasoning

3. COURSE CONTENT

The course introduces the definitions of key concepts and types of hazards, methodologies for hazard analysis, and the definitions and methods for vulnerability assessment. The course also analyzes natural and human-made systems and the tools and techniques for hazard and vulnerability assessment. Historical disaster events are analyzed, and crisis scenarios are developed. The course also covers risk reduction policies and management strategies.

1. Basic concepts of risk, hazard, and vulnerability: definitions, general principles, natural and human-made systems.
2. Methodologies for hazard and vulnerability analysis: qualitative, quantitative, and hybrid analysis, as well as uncertainty assessment tools.
3. Presentation of systems: properties of natural systems, properties of human-made systems, and systems with interactions.
4. Seismic hazard and vulnerability: earthquakes, faults, seismic hazard, vulnerability of buildings and infrastructures.
5. Floods and hydrological hazards: flood models, vulnerability of areas and infrastructures.
6. Climate change and environmental hazards: wildfires, droughts, erosion, heatwaves, hurricanes and cyclones, snowstorms, frosts, volcanic eruptions. Multi-hazard analysis.
7. Complex natural events: natural disaster cascade and their interactions, the resilience of natural ecosystems.
8. Transport, energy, water, and telecommunications infrastructures: hazard analysis in networks and critical infrastructures. Study of cascading failures and development of resilience enhancement strategies.
9. Risk assessment methodologies for human-made systems: accident models, hazard analyses, accident scenarios, and safety specifications.
10. Hazard analysis tools and assessment techniques: introduction to FTA (Fault Tree Analysis), FMEA (Failure Modes and Effects Analysis), and STPA (System-Theoretic Process Analysis).
11. Information systems and cybersecurity: cyber and telecommunications hazards. Vulnerability analysis of digital systems.
12. Man-made disasters and industrial hazards: major industrial accidents and risks in large technical projects.
13. Risk response plans: policies for vulnerability reduction in natural and human-made systems, and analysis of real-world case studies.

4. LEARNING & TEACHING METHODS - EVALUATION

TEACHING METHOD *Face to face, Distance learning, etc.*	Face to face Distance learning
USE OF INFORMATION & COMMUNICATIONS TECHNOLOGY (ICT) *Use of ICT in Teaching, in Laboratory Education, in Communication with students*	Use of ICT in Teaching Use of ICT in Communication with students
TEACHING ORGANIZATION *The ways and methods of teaching are described in detail.* *Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliographic research & analysis, Tutoring, Internship (Placement), Clinical Exercise, Art Workshop, Interactive learning,*	

Activity	*Workload/semester*
Lectures	39
Essay	50
Study	60
Examination	1
Total	**150**

Study visits, Study / creation, project, creation, project. Etc. *The supervised and unsupervised workload per activity is indicated here, so that total workload per semester complies to ECTS standards.*	
STUDENT EVALUATION *Description of the evaluation process* *Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Essay / Report, Oral Exam, Presentation in audience, Laboratory Report, Clinical examination of a patient, Artistic interpretation, Other/Others* *Please indicate all relevant information about the course assessment and how students are informed*	Student evaluation languages Greek English Method (Formative or Concluding) Concluding Essay: Assessed based on the quality of research, critical thinking, ability to analyze and synthesize information, and the application of appropriate solutions. Essay presentation of Assignment: Evaluated on the ability to present complex topics in an understandable manner, communication skills, and adaptability to questions and feedback. In-class participation: Assessed based on engagement and the ability to apply learned concepts to practical applications.

5. SUGGESTED BIBLIOGRAPHY

1. Aven, T. (2011). "Risk Analysis: Assessing Uncertainties Beyond Expected Values and Probabilities."
2. Blaikie, P., et al. (1994). At Risk: Natural Hazards, People's Vulnerability, and Disasters.
3. Füssel, H.-M. (2007). "Adaptation planning for climate change: concepts, assessment approaches, and key lessons." Sustainability Science.
4. Kappes, M. S., et al. (2012). "Assessing natural hazards and vulnerability in the context of climate change: A review of methods and case studies." Environmental Science & Policy.
5. Mayer, A. L., et al. (2011). "Understanding risk and vulnerability: insights for decision-making in climate change adaptation." Risk Analysis.
6. Pelling, M. (2003). The Vulnerability of Cities: Natural Disasters and Social Resilience.
7. UNDRR (United Nations Office for Disaster Risk Reduction). Sendai Framework for Disaster Risk Reduction (2015).

COURSE OUTLINE: ***LEADERSHIP AND DECISION MAKING***

1. GENERAL

SCHOOL	SCHOOL OF ENGINEERING		
DEPARTMENT	PREVENTION AND MANAGEMENT OF CRISIS AND DISASTERS: INNOVATIVE TECHNIQUES IN CIVIL PROTECTION		
LEVEL OF STUDIES	ISCED level 7 – Master's or equivalent level		
COURSE CODE	CP04	**SEMESTER**	1st SEMESTER
COURSE TITLE	LEADERSHIP AND DECISION MAKING		

TEACHING ACTIVITIES *If the ECTS Credits are distributed in distinct parts of the course e.g. lectures, labs etc. If the ECTS Credits are awarded to the whole course, then please indicate the teaching hours per week and the corresponding ECTS Credits.*	**TEACHING HOURS PER WEEK**	**ECTS CREDITS**
		6
Please, add lines if necessary. Teaching methods and organization of the course are described in section 4.		

COURSE TYPE *Background, General Knowledge, Scientific Area, Skill Development*	Scientific Area
PREREQUISITES:	NO
TEACHING & EXAMINATION LANGUAGE:	Greek, English
COURSE OFFERED TO ERASMUS STUDENTS:	YES
COURSE URL:	https://eclass.duth.gr/courses/

2. LEARNING OUTCOMES

Learning Outcomes

Please describe the learning outcomes of the course: Knowledge, skills and abilities acquired after the successful completion of the course.

At the end of the course the student will be able to:

- Know the basic principles of administration and decision-making during crisis management.
- Know the difference between leader and manager during the management of a crisis.
- To know how a leader manages people and organizations in a time of crisis.
- Be aware of the obstacles and problems that a leader must face (organizational culture, conflicts of interest of important stakeholders, etc.) during crisis management.
- Know the key characteristics of an effective leader during times of crisis.
- Know the decision-making process when managing a crisis.
- To know what strategic decisions a leader is called upon to make to effectively manage and address a crisis.
- To know the role that a leader is called upon to play in developing the organizational capacity (capacity building) of an institution/organization that will be called upon to

face a crisis.
- ❖ Know the role a leader is called upon to play in designing and implementing a crisis management plan.
- ❖ To know the role that a leader is called upon to play during the process of selecting and training the executives who will form the crisis management team.

General Skills

Name the desirable general skills upon successful completion of the module .

Search, analysis and synthesis of data and information,	*Project design and management*
ICT Use	*Equity and Inclusion*
Adaptation to new situations	*Respect for the natural environment*
Decision making	*Sustainability*
Autonomous work	*Demonstration of social, professional and moral responsibility and sensitivity to gender issues*
Teamwork	*Critical thinking*
Working in an international environment	*Promoting free, creative and inductive reasoning*
Working in an interdisciplinary environment	
Production of new research ideas	

- ❖ *Search, analysis and synthesis of data and information, ICT Use.*
- ❖ *Adaptation to new situations.*
- ❖ *Decision making.*
- ❖ *Autonomous work.*
- ❖ *Teamwork.*
- ❖ *Working in an international environment.*
- ❖ *Working in an interdisciplinary environment.*
- ❖ *Project design and management.*
- ❖ *Equity and Inclusion*
- ❖ *Critical thinking.*
- ❖ *Promoting free, creative and inductive reasoning.*

3. COURSE CONTENT

The course focuses on the study of fundamental concepts, theories and practices related to leadership and the decision-making process, especially in conditions of crisis and uncertainty.

Course Objectives:

- ❖ Understanding Basic Concepts
- ❖ Developing Critical Thinking
- ❖ Cultivating Leadership Skills
- ❖ Familiarity with Crisis Management
- ❖ Strengthening Ethics and Responsibility

The course curriculum will consist of the following thematic units:

1. Theoretical conceptualization of leadership.
2. Models – Leadership styles.
3. Characteristics of the leader.
4. Communication skills of a leader.
5. Leadership and Management.
6. The psychology of the leader during the decision-making process in a period of crisis.

7. Theories – Decision-making models.
8. Cognitive and emotional dimension in the decision-making process.
9. Decision-making process during a crisis.
10. The role of information in the decision-making process.
11. Strategic decision-making during the process of managing and dealing with a crisis.
12. Strategic decision-making to deal with problems and conflicts during the process of managing and dealing with a crisis.
13. Strategic decision-making to create a holistic and resilient crisis management and response mechanism.

4. LEARNING & TEACHING METHODS - EVALUATION

<table>
<tr><td>TEACHING METHOD
Face to face, Distance learning, etc.</td><td>Submition of Work, Distance learning</td></tr>
<tr><td>USE OF INFORMATION & COMMUNICATIONS TECHNOLOGY (ICT)
Use of ICT in Teaching, in Laboratory Education, in Communication with students</td><td>Use of ICT in Teaching and Communication with Students
❖ digital slides
❖ videos
❖ MsTeams/ e-class, webmail</td></tr>
<tr><td>TEACHING ORGANIZATION
The ways and methods of teaching are described in detail.
Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliographic research & analysis, Tutoring, Internship (Placement), Clinical Exercise, Art Workshop, Interactive learning, Study visits, Study / creation, project, creation, project. Etc.

The supervised and unsupervised workload per activity is indicated here, so that total workload per semester complies to ECTS standards.</td><td><table><tr><th>Δραστηριότητα</th><th>Workload/semester</th></tr><tr><td>Lectures</td><td></td></tr><tr><td>Essay</td><td></td></tr><tr><td>Study</td><td></td></tr><tr><td>Examinations</td><td></td></tr><tr><td>Total</td><td></td></tr></table></td></tr>
<tr><td>STUDENT EVALUATION
Description of the evaluation process

Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Essay / Report, Oral Exam, Presentation in audience, Laboratory Report, Clinical examination of a patient,</td><td>Student evaluation languages Greek
Method (Formative or Concluding):
❖ Written assignments and case analyses.
❖ Group simulation exercises.
❖ Final Examination (written or oral)</td></tr>
</table>

Artistic interpretation, Other/Others *Please indicate all relevant information about the course assessment and how students are informed*	

5. SUGGESTED BIBLIOGRAPHY

1. Rob Weinhold, Kevin Cowherd, Art of Crisis Leadership: Save Time, Money, Customers and Ultimately, Your Career, Apprentice House, 2016.
2. Μπουραντάς Δημήτρης, Ηγεσία: Ο δρόμος της διαρκούς επιτυχίας, Εκδόσεις Κριτική, Αθήνα 2005.
3. Klann Gene, Crisis leadership : using military lessons, organizational experiences, and the power of influence to lessen the impact of chaos on the people you lead, Center for Creative Leadership, Greensboro, North Carolina, 2003.
4. Patric J. Montana, Bruce H. Charnow, Μάνατζμεντ: Κλασική θεωρία Μάνατζμεντ, Δομές Οργανισμών, Μάνατζμεντ Προσωπικού, Δυναμική ομάδων εργασίας, Εκδόσεις Κλειδάριθμος, 3η Έκδοση, Αθήνα 2002.
5. Σφακιανάκης Μανώλης Κων., Διοικητική Κρίσεων –Crisis Management, Εκδόσεις ΕΛΛΗΝ, Αθήνα 1998.
6. Κουσκουβέλης Ηλίας, ΛΗΨΗ ΑΠΟΦΑΣΕΩΝ, ΚΡΙΣΗ, ΔΙΑΠΡΑΓΜΑΤΕΥΣΗ: ΘΕΩΡΙΑ ΚΑΙ ΠΡΑΚΤΙΚΗ, Εκδόσεις ΠΑΠΑΖΗΣΗ, Αθήνα 1997.Σφακιανάκης Μανώλης Κων., Διοικητική Κρίσεων –Crisis Management, Εκδόσεις ΕΛΛΗΝ, Αθήνα 1998.Σταμάτης Γιώργος, Ολοκληρωμένη Στρατηγική Επικοινωνία, Β' Έκδοση, Εκδόσεις Σταμούλη, Αθήνα 2007.

COURSE OUTLINE HOMELAND SECURITY – COUNTERTERRORISM AND CYBERSECURITY

1. GENERAL

SCHOOL	SCHOOL OF ENGINEERING		
DEPARTMENT	PREVENTION AND MANAGEMENT OF CRISIS AND DISASTERS: INNOVATIVE TECHNIQUES IN CIVIL PROTECTION		
LEVEL OF STUDIES	ISCED level 7 – Master's or equivalent level		
COURSE CODE	CP05.1	**SEMESTER**	1th Semester
COURSE TITLE	Homeland Security – counterterrorism and Cybersecurity		

TEACHING ACTIVITIES *If the ECTS Credits are distributed in distinct parts of the course e.g. lectures, labs etc. If the ECTS Credits are awarded to the whole course, then please indicate the teaching hours per week and the corresponding ECTS Credits.*	**TEACHING HOURS PER WEEK**	**ECTS CREDITS**
	3.0	6.0
Please, add lines if necessary. Teaching methods and organization of the course are described in section 4.		

COURSE TYPE *Background, General Knowledge, Scientific Area, Skill Development*	Scientific Area
PREREQUISITES:	NO
TEACHING & EXAMINATION LANGUAGE:	Greek, English
COURSE OFFERED TO ERASMUS STUDENTS:	YES
COURSE URL:	https://eclass.duth.gr/courses/

2. LEARNING OUTCOMES

Learning Outcomes

Please describe the learning outcomes of the course: Knowledge, skills and abilities acquired after the successful completion of the course.

After completing the course, students should be able to:

• Understand the fundamental principles, strategies, and practices related to maintaining public order, protecting citizens, and safeguarding critical infrastructure at the national level.
• Analyze contemporary security challenges, such as combating organized crime, terrorism, natural and human-made disasters, and crisis management.
• Explain the legal framework and the role of institutional bodies involved in internal security and law enforcement, as well as the processes of national and international cooperation.
• Apply modern technological methods and tools to enhance security, prevent threats, and protect critical information.
• Develop crisis management skills by designing and implementing immediate response strategies in emergency situations.
• Evaluate the balance between security and democratic values, considering the importance of protecting human rights and civil liberties.
• Collaborate effectively with various stakeholders at national and international levels, strengthening the interdisciplinary approach to addressing security threats.
• Develop critical thinking and problem-solving skills by assessing real security cases and formulating proposals for improving policies and protective measures.

General Skills

Name the desirable general skills upon successful completion of the module

Search, analysis and synthesis of data and information, ICT Use	*Project design and management*
	Equity and Inclusion

Adaptation to new situations *Decision making* *Autonomous work* *Teamwork* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*Respect for the natural environment* *Sustainability* *Demonstration of social, professional and moral responsibility and sensitivity to gender issues* *Critical thinking* *Promoting free, creative and inductive reasoning*
Search, analysis, and synthesis of data and information, ICT Use *Adaptation to new situations* *Decision-making* *Autonomous work* *Teamwork* *Working in an international environment* *Working in an interdisciplinary environment* *Project design and management* *Demonstration of social, professional, and moral responsibility and sensitivity to gender issues* *Critical thinking* *Promotion free, creative, and inductive reasoning*	

3. COURSE CONTENT

The purpose of the course is to equip students with knowledge, skills, and methodological tools for understanding, analyzing, and addressing modern challenges related to internal security, terrorism, and cyber threats.

Specifically, the course aims to:

1. *Develop an understanding of internal security concepts and policies, including the institutional and legal frameworks governing threat prevention and response.*
2. *Analyze terrorism and counterterrorism policies by examining its causes, forms, response strategies, and international cooperation in this field.*
3. *Study modern cyber threats (such as cyberattacks, data breaches, and electronic warfare) and mechanisms for protecting critical infrastructure.*
4. *Enhance decision-making and crisis management skills in environments related to internal security and emergency situations.*
5. *Understand the role of international organizations and state mechanisms in shaping security policies and combating terrorism.*
6. *Utilize modern technologies and data analysis methods for identifying, monitoring, and preventing threats.*
7. *Promote critical thinking and research capabilities, encouraging students to propose innovative approaches to addressing security challenges.*

4. LEARNING & TEACHING METHODS - EVALUATION

TEACHING METHOD *Face to face, Distance learning, etc.*	Face to face
USE OF INFORMATION & COMMUNICATIONS TECHNOLOGY (ICT) *Use of ICT in Teaching, in Laboratory Education, in Communication with students*	Use of ICT in Teaching Use of ICT in Communication with students
TEACHING ORGANIZATION *The ways and methods of teaching are described in detail.* *Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliographic research & analysis, Tutoring, Internship (Placement), Clinical Exercise, Art Workshop, Interactive learning, Study visits, Study / creation, project, creation, project. Etc.* *The supervised and unsupervised workload per activity is indicated here, so that total workload per semester complies to ECTS standards.*	

Activity	*Workload/semester*
Lectures	39
Assignments	60
Study and analysis of literature	78
Exams	3
Total	**180**

STUDENT EVALUATION *Description of the evaluation process* *Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Essay / Report, Oral Exam, Presentation in audience, Laboratory Report, Clinical examination of a patient, Artistic interpretation, Other/Others* *Please indicate all relevant information about the course assessment and how students are informed*	Student evaluation languages Greek English Method (Formative or Concluding) Summative Student evaluation methods Written Exams towards Solving a Problem 50% Relative use case compilation 50%

5. SUGGESTED BIBLIOGRAPHY

Baylis, J., Wirtz, J. J., & Gray, C. S. *(2018). Strategy in the Contemporary World: An Introduction to Strategic Studies. Oxford University Press.*

Newman, E. *(2016). Understanding Civil Wars: Continuity and Change in Intrastate Conflict. Routledge.*

Silke, A. (Ed.). *(2018). Routledge Handbook of Terrorism and Counterterrorism. Routledge.*

Hoffman, B. *(2017). Inside Terrorism (3rd ed.). Columbia University Press.*

COURSE OUTLINE

GEOTECHNICAL HAZARDS: UNDERSTANDING – HAZARD ASSESSMENT – PREVENTION AND PROTECTION MEASURES

1. GENERAL

SCHOOL	SCHOOL OF ENGINEERING		
DEPARTMENT	PREVENTION AND MANAGEMENT OF CRISIS AND DISASTERS: INNOVATIVE TECHNIQUES IN CIVIL PROTECTION		
LEVEL OF STUDIES	ISCED level 7 – Master's or equivalent level		
COURSE CODE	CP05.2	**SEMESTER**	8th Semester
COURSE TITLE	Geotechnical hazards: understanding – hazard assessment – prevention and protection measures		

TEACHING ACTIVITIES *If the ECTS Credits are distributed in distinct parts of the course e.g. lectures, labs etc. If the ECTS Credits are awarded to the whole course, then please indicate the teaching hours per week and the corresponding ECTS Credits.*	**TEACHING HOURS PER WEEK**	**ECTS CREDITS**
	3.0	6.0
Please, add lines if necessary. Teaching methods and organization of the course are described in section 4.		

COURSE TYPE *Background, General Knowledge, Scientific Area, Skill Development*	Scientific Area
PREREQUISITES:	NO
TEACHING & EXAMINATION LANGUAGE:	Greek, English
COURSE OFFERED TO ERASMUS STUDENTS:	YES
COURSE URL:	https://eclass.duth.gr/courses/

2. LEARNING OUTCOMES

Learning Outcomes

Please describe the learning outcomes of the course: Knowledge, skills and abilities acquired after the successful completion of the course.

At the end of the course the student will be able to:

- Understand the fundamental geotechnical hazards and their causes.
- Evaluate and identify susceptible areas and their associated risks.
- Understand both immediate and long-term mitigation measures.
- Recognize the importance of raising awareness and coexistence between local communities and geohazards through appropriate education and preventive measures.
- Be capable of guiding proper practices for communication during hazardous events and promote community resiliencefor rapid recovery.

General Skills

Name the desirable general skills upon successful completion of the module

Search, analysis and synthesis of data and information, *ICT Use* *Adaptation to new situations* *Decision making* *Autonomous work* *Teamwork* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*Project design and management* *Equity and Inclusion* *Respect for the natural environment* *Sustainability* *Demonstration of social, professional and moral responsibility and sensitivity to gender issues* *Critical thinking* *Promoting free, creative and inductive reasoning*
Adaptation to new situations Decision making Working in an interdisciplinary environment Project design and management Respect for the natural environment Promoting free, creative and inductive reasoning	

3. COURSE CONTENT

This course provides an introductory insight into hazards related to soil failures and large ground deformations. It describes the most significant geotechnical hazards, emphasizing earthquakes and their associated or induced phenomena, landslides of soil and rock slopes, rockfalls, large-scale ground movements (soil subsidence, movements of natural and artificial slopes), and more. The course exploits the primary causes of these hazards, failure mechanisms, and key characteristics of their manifestations. Methods for immediate and long-term mitigation, as well as temporary or permanent countermeasures, are recommended. Finally, the significance of effective public education and awareness, clear communication strategies, and empowering local communities is emphasized.

1. Introduction to geotechnical hazards
2. Subsidence – large deformations – dynamic settlements: mechanisms – causes – mitigation measures
3. Fundamentals of earthquake generation mechanisms and parameters affecting seismic motion. Examples from historical events and records.
4. Soil liquefaction under seismic loading: mechanism, susceptibility, impacts, and mitigation measures.
5. Seismic behavior of geotechnical structures: examples and analysis methods.
6. Landslides: the natural phenomenon, classification, terminology, natural and anthropogenic causes.
7. Landslides as a natural hazard and the associated risk.
8. Landslide mitigation: active and passive measures. Examples and applications from landslides in Greece.
9. Rock slope failures: types, mechanisms, causes, consequences, and case studies from Greece and worldwide.
10. Rock slope failure mitigation: passive and active protective measures.
11. Study and investigation of geohazards in relation to spatial scale.
12. Modern methods and tools in geotechnical hazard analysis.

13. Public awareness – education and proactive measures in areas vulnerable to geotechnical hazards.

4. LEARNING & TEACHING METHODS - EVALUATION

TEACHING METHOD *Face to face, Distance learning, etc.*	Face to face Distance learning
USE OF INFORMATION & COMMUNICATIONS TECHNOLOGY (ICT) *Use of ICT in Teaching, in Laboratory Education, in Communication with students*	Use of ICT in Teaching Use of ICT in Communication with students
TEACHING ORGANIZATION *The ways and methods of teaching are described in detail.* *Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliographic research & analysis, Tutoring, Internship (Placement), Clinical Exercise, Art Workshop, Interactive learning, Study visits, Study / creation, project, creation, project. Etc.* *The supervised and unsupervised workload per activity is indicated here, so that total workload per semester complies to ECTS standards.*	<table><tr><th>*Activity*</th><th>*Workload/semester*</th></tr><tr><td>Lectures</td><td>39</td></tr><tr><td>Essay</td><td>50</td></tr><tr><td>Study</td><td>60</td></tr><tr><td>Examination (essay presentation)</td><td>1</td></tr><tr><td>Total</td><td>**150**</td></tr></table>
STUDENT EVALUATION *Description of the evaluation process* *Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Essay / Report, Oral Exam, Presentation in audience, Laboratory Report, Clinical examination of a patient, Artistic interpretation, Other/Others* *Please indicate all relevant information about the course assessment and how students are informed*	Student evaluation languages Greek English Method (Formative or Concluding) Concluding Essay: Assessed based on the quality of research, critical thinking, ability to analyze and synthesize information, and the application of appropriate solutions. Essay presentation of Assignment: Evaluated on the ability to present complex topics in an understandable manner, communication skills, and adaptability to questions and feedback. In-class participation: Assessed based on engagement and the ability to apply learned concepts to practical applications.

5. SUGGESTED BIBLIOGRAPHY

1. Geotechnical Earthquake Engineering, Steven L. Kramer & Jonathan P. Stewart, 2nd Edition, Taylor and Francis Group, 2024
2. Landslides – Investigation and Mitigation, Eds: Keith Turner & Robert Schuster, National Academy Press, 1996
3. Rock Slope Engineering, Duncan C. Wyllie, 5th Edition, CRC Press, 2017
4. Φυσικές και Τεχνολογικές Καταστροφές, Ευθύμιος Λ. Λέκκας, 2η Έκδοση, Τομέας Δυναμικής, Τεκτονικής & Εφαρμοσμένης Γεωλογίας – Τμήμα Γεωλογίας και Γεωπεριβάλλοντος Ε.Κ.Π.Α., 2000

2nd Semester

COURSE OUTLINE

1. GENERAL

SCHOOL	SCHOOL OF ENGINEERING		
DEPARTMENT	CRISIS & DISASTER PREVENTION AND MANAGEMENT: INNOVATIVE TECHNIQUES IN CIVIL PROTECTION		
LEVEL OF STUDIES	7th		
COURSE CODE	CP06	**SEMESTER**	2nd
COURSE TITLE	FINANCIAL MANAGEMENT, REHABILITATION & STATE ASSISTANCE IN CRISIS AND DISASTERS		

TEACHING ACTIVITIES *If the ECTS Credits are distributed in distinct parts of the course e.g. lectures, labs etc. If the ECTS Credits are awarded to the whole course, then please indicate the teaching hours per week and the corresponding ECTS Credits*	**TEACHING HOURS PER WEEK**	**ECTS CREDITS**
	3	6
Please, add lines if necessary. Teaching methods and organization of the course are described in section 4.		

COURSE TYPE	Scientific area
PREREQUISITES:	No
TEACHING & EXAMINATION LANGUAGE:	Greek, English
COURSE OFFERED TO ERASMUS STUDENTS:	Yes
COURSE URL:	https://eclass.duth.gr/courses/

2. LEARNING OUTCOMES

Learning Outcomes

Learning outcomes of the course are described, the specific knowledge, skills and abilities of an appropriate level that students will acquire after the successful completion of the course

Consult Appendix A

- *Description of Tutorial Results Level for every study round according to the Qualification Context of the European Highest Education Area*
- *Descriptive Indexes of 6th, 7th and 8th Level of the European Qualification Context of Lifelong Learning and Appendix B*
- *Summary Guide for Writing Learning Outcomes*

The aim of the course is to supply the students with knowledge related to economic disaster management, infrastructure restoration and community recovery after natural and human-made disasters.

Upon successful completion of the course the students will be able to:

- Analyze the economic impacts of disasters at the national and local level
- Know/Understand the sources of funding and resources for the rehabilitation of affected areas

• Develop strategies for the rehabilitation of infrastructure and the recovery of communities • Be familiar with state aid, insurance and compensation programs
• Understand policies to support vulnerable populations during the recovery period
• Develop rehabilitation plans for affected areas
• Be able to evaluate, propose and implement sustainable adaptation strategies for affected areas and populations

General Skills

Taking into account the general skills that the graduate must have acquired (as listed in the Diploma Supplement and listed below), which of the following is the course intended for;

Search, analysis and synthesis of data and information, using the necessary technologies	*Project design and management*
Adaptation to new situations	*Respecting diversification and multiculturalism*
Decision making	*Respecting natural environment*
Autonomous work	*Demostration of social, professional and moral responsibility and sensitivity in gender issues*
Team work	*Critisism and self – criticism practice*
Work in an international environment	*Promoting free, creative and inductive thinking*
Work in an interdisciplinary environment	
Production of new research ideas	

•Adapting to new situations

•Decision making

•Working in an interdisciplinary environment

•Project planning and management

• Respect for the natural environment

• Promoting free, creative and inductive thinking

• Teamwork

• Searching, analyzing and synthesizing data and information, using the necessary technologies

3. COURSE CONTENT

1. Basic concepts, public expenditure, government intervention
2. Methods of valuation of external economies
3. Applications of environmental valuation techniques
4. Cost-benefit analysis. Restoration costs
5. Damages, compensation and insurance
6. Financial instruments for rehabilitation and reconstruction of affected areas - Disaster bonds
7. Infrastructure and regional development
8. Crisis and economic disaster management by the European Union
9. Population management. Socio-demographic implications.

10. Rehabilitation plans
11. Government assistance, insurance and compensation programmes
12. Policies to support vulnerable populations
13. Strategies for infrastructure rehabilitation and community recovery

4. TEACHING and LEARNING METHODS – EVALUATION

<table>
<tr><td>TEACHING METHOD
Face to face, Distance learning, etc.</td><td>Face to face, Distance learning</td></tr>
<tr><td>USE OF INFORMATION & COMMUNICATIONS TECHNOLOGY (ICT)</td><td>ICT use in education and in communication with students.
a. Digital slides
b. βίντεο
•MsTeams/ e-class, webmail</td></tr>
<tr><td>TEACHING ORGANIZATION
The ways and methods of teaching are described in detail.
Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliographic research & analysis, Tutoring, Internship (Placement), Clinical Exercise, Art Workshop, Interactive learning, Study visits, Study / creation, project, creation, project. Etc.

The supervised and unsupervised workload per activity is indicated here, so that total workload per semester complies to ECTS standards.</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Lectures</td><td>39</td></tr>
<tr><td>Essay</td><td>60</td></tr>
<tr><td>Bibliography research and analysis</td><td>78</td></tr>
<tr><td>Examinations</td><td>3</td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td>Total</td><td>180</td></tr>
</table>
</td></tr>
<tr><td>STUDENT EVALUATION
Description of the evaluation process

Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Essay / Report, Oral Exam, Presentation in audience, Laboratory Report, Clinical examination of a patient, Artistic interpretation, Other/Others

Please indicate all relevant information about the course</td><td>Evaluation language: Greek
Student evaluation methods

Summative
1. Written final exam (50%)
2. Written Assignments or Case Studies (50%)

Students having ascertained dyslexia problems are examined with oral methods.
Students have access to their essay at any time.</td></tr>
</table>

assessment and how students are informed	

5. PROPOSED LITERATURE

-Proposed literature :

• Mergos G. 2007. Socio – economic evaluation of investments and policies. Vol A'. E. Mpenou editions. Athens.

• Polyzos, S. 2003.Regional Development. Kritiki editions. Athens.

- Skidmore, M. (Ed). (2022). Handbook on the Economics of Disasters. Edward Elgar Publishing

-Related scientific journals:

Ecological Economics, Journal of Environmental Economics and Management, Mitigation and Adaptation Strategies for Global Change, Journal of Development Economics Risk Analysis Environmental and Resource Economics Natural Hazards Journal of Environmental Management Economics of Disasters and Climate Change, Environmental Sociology Human and Ecological Risk Assessment: An International Journal, International Journal of Disaster Risk Reduction

COURSE OUTLINE: ***CRISIS COMMUNICATION MANAGEMENT & MANAGEMENT OF MEDIA, STAKEHOLDERS AND PUBLIC OPINION DURING CRISES AND NATURAL DISASTERS SITUATION***

1. GENERAL

SCHOOL	SCHOOL OF ENGINEERING		
DEPARTMENT	PREVENTION AND MANAGEMENT OF CRISIS AND DISASTERS: INNOVATIVE TECHNIQUES IN CIVIL PROTECTION		
LEVEL OF STUDIES	ISCED level 7 – Master's or equivalent level		
COURSE CODE	CP07	**SEMESTER**	2nd SEMESTER
COURSE TITLE	Crisis communication management & management of media, stakeholders and public opinion during crises and natural disasters situation.		

TEACHING ACTIVITIES *If the ECTS Credits are distributed in distinct parts of the course e.g. lectures, labs etc. If the ECTS Credits are awarded to the whole course, then please indicate the teaching hours per week and the corresponding ECTS Credits.*	**TEACHING HOURS PER WEEK**	**ECTS CREDITS**
		6
Please, add lines if necessary. Teaching methods and organization of the course are described in section 4.		

COURSE TYPE *Background, General Knowledge, Scientific Area, Skill Development*	Scientific Area
PREREQUISITES:	NO
TEACHING & EXAMINATION LANGUAGE:	Greek, English
COURSE OFFERED TO ERASMUS STUDENTS:	YES
COURSE URL:	https://eclass.duth.gr/courses/

2. LEARNING OUTCOMES

Learning Outcomes

Please describe the learning outcomes of the course: Knowledge, skills and abilities acquired after the successful completion of the course.

At the end of the course the student will be able to:

- Possess the necessary communication skills, so that they can communicate effectively both on an interpersonal and intergroup level during a crisis.
- To understand the sense making process of a crisis, so that they can make the necessary decisions to address it.
- To know the process of framing a crisis (it concerns the effort of crisis managers to highlight specific positive elements of the entity involved in the crisis, so that to shape the perception of the target audience regarding the events and impacts of the crisis and to positively influence them, so that they maintain a positive and supportive attitude towards the entity in its efforts to address the crisis).
- Have the knowledge and ability to manage the media during a crisis.

- ❖ Have the knowledge and ability to manage public opinion during a crisis.
- ❖ Be able to plan and implement an effective strategic communication campaign in crisis and emergency situations.

General Skills

Name the desirable general skills upon successful completion of the module .

Search, analysis and synthesis of data and information,	*Project design and management*
ICT Use	*Equity and Inclusion*
Adaptation to new situations	*Respect for the natural environment*
Decision making	*Sustainability*
Autonomous work	*Demonstration of social, professional and moral responsibility and sensitivity to gender issues*
Teamwork	*Critical thinking*
Working in an international environment	*Promoting free, creative and inductive reasoning*
Working in an interdisciplinary environment	
Production of new research ideas	

- ❖ *Search, analysis and synthesis of data and information, ICT Use.*
- ❖ *Adaptation to new situations.*
- ❖ *Decision making.*
- ❖ *Autonomous work.*
- ❖ *Teamwork.*
- ❖ *Working in an international environment.*
- ❖ *Working in an interdisciplinary environment.*
- ❖ *Project design and management.*
- ❖ *Critical thinking.*
- ❖ *Promoting free, creative and inductive reasoning.*

3. COURSE CONTENT

1. Introduction to communication.
2. The process of communication.
3. Human communication (understanding ourselves and others).
4. The role of perception in communication.
5. Crisis management life cycle.
6. Theoretical conceptualization of the crisis phenomenon.
7. Crisis communication environment.
8. The role of communication in crisis management.
9. Crisis communication management.
10. Dealing with the media when managing and responding to crises.
11. Dealing with stakeholders and public opinion when managing and responding to crises.
12. Theoretical conceptualization of strategic communication.
13. Design and implementation of a strategic communication campaign for communication management and crisis response.

4. LEARNING & TEACHING METHODS - EVALUATION

TEACHING METHOD *Face to face, Distance learning, etc.*	Submition of Work, Distance learning
USE OF INFORMATION & COMMUNICATIONS	Use of ICT in Teaching and Communication with Students ❖ digital slides

<table>
<tr><td>TECHNOLOGY (ICT)
Use of ICT in Teaching, in Laboratory Education, in Communication with students</td><td>❖ videos
❖ MsTeams/ e-class, webmail</td></tr>
<tr><td>TEACHING ORGANIZATION
The ways and methods of teaching are described in detail.
Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliographic research & analysis, Tutoring, Internship (Placement), Clinical Exercise, Art Workshop, Interactive learning, Study visits, Study / creation, project, creation, project. Etc.

The supervised and unsupervised workload per activity is indicated here, so that total workload per semester complies to ECTS standards.</td><td><table><tr><th>Δραστηριότητα</th><th>Workload/semester</th></tr><tr><td>Lectures</td><td></td></tr><tr><td>Essay</td><td></td></tr><tr><td>Study</td><td></td></tr><tr><td>Examinations</td><td></td></tr><tr><td>Total</td><td></td></tr></table></td></tr>
<tr><td>STUDENT EVALUATION
Description of the evaluation process

Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Essay / Report, Oral Exam, Presentation in audience, Laboratory Report, Clinical examination of a patient, Artistic interpretation, Other/Others

Please indicate all relevant information about the course assessment and how students are informed</td><td>Student evaluation languages Greek
Method (Formative or Concluding):
❖ Written case analyses: Cases of crisis communication management and handling of mass media and expert audiences and public opinion in emergency and crisis situations.
❖ Group simulation exercises: Media handling scenarios during crisis management.</td></tr>
</table>

5. SUGGESTED BIBLIOGRAPHY

1. Balomenos P. Konstantinos, “TURKEY’S STRATEGIC COMMUNICATION CAMPAIGN IN OPERATION «PEACE SPRING»”, Research Institute for European and American Studies (RIEAS) & Libya Institute for Advanced Studies (LIAS), Athens, 2020.
2. Μπαλωμένος Παν. Κωνσταντίνος, Διεθνής Τρομοκρατία και Στρατηγική Επικοινωνία. Διαχείριση τρομοκρατικών κρίσεων, Εκδόσεις Ποιότητα, Αθήνα, 2017.
3. Πλειός Γιώργος, Η ΚΡΙΣΗ ΚΑΙ ΤΑ ΜΜΕ, Αθήνα, Εκδόσεις Παπαζήση, 2013.
4. Coombs Timothy W., Holladay Sherry J., The Handbook of Crisis Communication, USA, WILEY- BLACKWELL Publishing Ltd, 2010.

5. Fearn-Banks Kathleen, Crisis Communications: A Casebook Approach, Third Edition, New Jersey, Lawrence Erlbaum Associates, 2007.
6. Σταμάτης Γιώργος, Ολοκληρωμένη Στρατηγική Επικοινωνία, Β' Έκδοση, Εκδόσεις Σταμούλη, Αθήνα 2007.

COURSE OUTLINE

RECOVERY PROJECTS AND TECHNICAL INTERVENTIONS AFTER NATURAL DISASTERS

1. GENERAL

SCHOOL	SCHOOL OF ENGINEERING		
DEPARTMENT	PREVENTION AND MANAGEMENT OF CRISIS AND DISASTERS: INNOVATIVE TECHNIQUES IN CIVIL PROTECTION		
LEVEL OF STUDIES	ISCED level 7 – Master's or equivalent level		
COURSE CODE	CP08	**SEMESTER**	8th Semester
COURSE TITLE	Recovery Projects and Technical Interventions After Natural Disasters		

TEACHING ACTIVITIES *If the ECTS Credits are distributed in distinct parts of the course e.g. lectures, labs etc. If the ECTS Credits are awarded to the whole course, then please indicate the teaching hours per week and the corresponding ECTS Credits.*	**TEACHING HOURS PER WEEK**	**ECTS CREDITS**
	3.0	6.0
Please, add lines if necessary. Teaching methods and organization of the course are described in section 4.		

COURSE TYPE *Background, General Knowledge, Scientific Area, Skill Development*	Scientific Area
PREREQUISITES:	NO
TEACHING & EXAMINATION LANGUAGE:	Greek, English
COURSE OFFERED TO ERASMUS STUDENTS:	YES
COURSE URL:	https://eclass.duth.gr/courses/

2. LEARNING OUTCOMES

Learning Outcomes

Please describe the learning outcomes of the course: Knowledge, skills and abilities acquired after the successful completion of the course.

At the end of the course the student will be able to:

- Analyze the impacts of different natural disasters on the built and natural environment.
- Select and apply appropriate restoration techniques for a variety of natural disasters.
- Understand the legislative and financial framework of restoration projects.
- Implement sustainable solutions that align with disaster-affected areas' specific characteristics and environmental constraints.
- Propose and integrate technically sound and feasible solutions that enhance the resilience of areas impacted by natural disasters.

General Skills

Name the desirable general skills upon successful completion of the module

Search, analysis and synthesis of data and Project design and management

information, *ICT Use* *Adaptation to new situations* *Decision making* *Autonomous work* *Teamwork* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*Equity and Inclusion* *Respect for the natural environment* *Sustainability* *Demonstration of social, professional and moral responsibility and sensitivity to gender issues* *Critical thinking* *Promoting free, creative and inductive reasoning*
Adaptation to new situations Decision making Teamwork Working in an interdisciplinary environment Project design and management Respect for the natural environment Promoting free, creative and inductive reasoning	

3. COURSE CONTENT

The course focuses on the methodologies, techniques, and processes for restoring areas and infrastructure affected by natural disasters. It examines the types of interventions required after a range of widely known natural disasters that traditionally impact Greece, including earthquakes, floods, wildfires, landslides, and failures of soil and rock slopes. The course also covers other natural disasters that have become more prevalent due to climate change, such as drought and desertification, hurricanes and cyclones, storms and extreme weather events, snowstorms and frost, tsunamis, and volcanic eruptions. Finally, the course also presents and analyzes strategies for planning and implementing restoration projects and the legislative and financial framework applied to emergency and recovery processes.

1. Introduction to Natural Disasters and Their Impacts: Definition and classification of natural disasters, effects on the built and natural environment, and the role of local, state, and international organizations in disaster recovery.
2. Restoration Strategies and Crisis Management: Emergency response plans, evacuation strategies, recovery phases (immediate, short-term, long-term), prioritization of restoration projects, resilience, and infrastructure adaptation.
3. Restoration Techniques and Infrastructure Redesign: Reconstruction of buildings, road and rail networks, bridges, hydraulic and port works.
4. Sustainability and Resilience in Restoration and Reconstruction: Use of innovative materials, green solutions, and adaptation to climate change.
5. Legislative and Institutional Framework: Policies and protocols for restoration processes, case studies of post-disaster recovery efforts in Greece and abroad.
6. Earthquakes: Collapses of buildings and critical infrastructure, reinforcement and reconstruction with earthquake-resistant materials, upgrading/modification of seismic design regulations, and strengthening of network density.
7. Floods: Reconstruction of drainage networks and flood protection works with climate-adaptive designs, restoration of residential and agricultural areas, and reinforcement of coastal and riverbank zones with nature-based solutions.

8. Wildfires: Reforestation and management of burned areas, ecosystem restoration, soil protection from erosion and flooding, and enhancement of fire protection.
9. Landslides and Slope Instabilities: Slope stabilization/reinforcement measures, protection of road networks, strengthening buildings and infrastructure in high-risk zones, implementation of monitoring and early warning systems.
10. Drought and Desertification: Due to climate change, Greece faces increasing drought and water scarcity issues, which impact agriculture, livestock farming, beekeeping, water resource availability, and the natural environment. Solutions include designing and constructing dams, reservoirs, and water storage systems and implementing sustainable agricultural practices.
11. Hurricanes, Cyclones, Storms, Frost, and Extreme Weather Events (Meteorological Storms): Restoration of infrastructure using resilient materials and appropriate designs, protection of coastal areas and ports, mitigation measures for storm damage, upgrading drainage systems, and strengthening critical infrastructure (telecommunications, energy networks, road and rail systems).
12. Tsunamis and Volcanic Eruptions: Although rare in Greece, they have occurred. Early warning systems for Tsunamis, resilient coastal infrastructure design, and public education. Issues related to volcanic eruptions: disruptions to air travel, hazardous gases, potential tsunamis (underwater eruptions), destruction of local infrastructure, and public preparedness training.
13. Case Studies of Natural Disasters in Greece and Abroad: Description, management strategies, emergency response plans, mitigation measures, and recovery efforts.

4. LEARNING & TEACHING METHODS - EVALUATION

<table>
<tr><td>TEACHING METHOD
Face to face, Distance learning, etc.</td><td>Face to face
Distance learning</td></tr>
<tr><td>USE OF INFORMATION & COMMUNICATIONS TECHNOLOGY (ICT)
Use of ICT in Teaching, in Laboratory Education, in Communication with students</td><td>Use of ICT in Teaching
Use of ICT in Communication with students</td></tr>
<tr><td>TEACHING ORGANIZATION
The ways and methods of teaching are described in detail.
Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliographic research & analysis, Tutoring, Internship (Placement), Clinical Exercise, Art Workshop, Interactive learning, Study visits, Study / creation, project, creation, project. Etc.

The supervised and unsupervised workload per activity is indicated here, so that total workload per</td><td>
<table>
<tr><th>Activity</th><th>Workload/semester</th></tr>
<tr><td>Lectures</td><td>39</td></tr>
<tr><td>Essay</td><td>50</td></tr>
<tr><td>Study</td><td>58</td></tr>
<tr><td>Examination</td><td>3</td></tr>
<tr><td>Total</td><td>150</td></tr>
</table>
</td></tr>
</table>

semester complies to ECTS standards.	
STUDENT EVALUATION *Description of the evaluation process* *Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Essay / Report, Oral Exam, Presentation in audience, Laboratory Report, Clinical examination of a patient, Artistic interpretation, Other/Others* *Please indicate all relevant information about the course assessment and how students are informed*	Student evaluation languages Greek English Method (Formative or Concluding) Concluding Examination In-class participation: Assessed based on engagement and the ability to apply learned concepts to practical applications.

5. SUGGESTED BIBLIOGRAPHY

1. Principles of Emergency Planning and Management, David Alexander, 1st Edition, Oxford University Press, 2002
2. Vulnerability and Resilience to Natural Hazards, Sven Fuchs and Thomas Thaler, Cambridge University Press, 2018
3. Φυσικές και Τεχνολογικές Καταστροφές, Ευθύμιος Λ. Λέκκας, 2η Έκδοση, Τομέας Δυναμικής, Τεκτονικής & Εφαρμοσμένης Γεωλογίας – Τμήμα Γεωλογίας και Γεωπεριβάλλοντος Ε.Κ.Π.Α., 2000

COURSE OUTLINE NEW TECHNOLOGIES & EDUCATIONAL TECHNIQUES IN RISK AND DISASTER MANAGEMENT - INTELLIGENT DECISION SUPPORT SYSTEMS

1. GENERAL

SCHOOL	SCHOOL OF ENGINEERING		
DEPARTMENT	PREVENTION AND MANAGEMENT OF CRISIS AND DISASTERS: INNOVATIVE TECHNIQUES IN CIVIL PROTECTION		
LEVEL OF STUDIES	ISCED level 7 – Master's or equivalent level		
COURSE CODE	CP09	**SEMESTER**	2nd Semester
COURSE TITLE	New Technologies & Educational Techniques in Risk and Disaster Management - Intelligent Decision Support Systems		

TEACHING ACTIVITIES *If the ECTS Credits are distributed in distinct parts of the course e.g. lectures, labs etc. If the ECTS Credits are awarded to the whole course, then please indicate the teaching hours per week and the corresponding ECTS Credits.*	**TEACHING HOURS PER WEEK**	**ECTS CREDITS**
	3	6
Please, add lines if necessary. Teaching methods and organization of the course are described in section 4.		

COURSE TYPE *Background, General Knowledge, Scientific Area, Skill Development*	Scientific Area
PREREQUISITES:	NO
TEACHING & EXAMINATION LANGUAGE:	Greek, English
COURSE OFFERED TO ERASMUS STUDENTS:	YES
COURSE URL:	https://eclass.duth.gr/courses/

2. LEARNING OUTCOMES

Learning Outcomes

Please describe the learning outcomes of the course: Knowledge, skills and abilities acquired after the successful completion of the course.

Upon completion of the course, the student will be able to:

- *Understand the capabilities of intelligent decision support systems in civil protection.*
- *Design and develop specialized DSS for addressing specific problems.*
- *Evaluate the effectiveness of existing DSS and propose improvements.*
- *Contribute to the development of innovative solutions for crisis and disaster prevention and management.*
- *Understand the unique cyber threats that intensify during crises and disasters, as well as their potential impact on humanitarian aid, critical infrastructure, and social cohesion.*
- *Recognize the potential of new technologies in civil protection education.*
- *Design and implement innovative educational programs.*
- *Evaluate the effectiveness of various educational methods.*

- *Contribute to the development of more effective training systems for risk and disaster management.*

General Skills

Name the desirable general skills upon successful completion of the module

Search, analysis and synthesis of data and information,	*Project design and management*
ICT Use	*Equity and Inclusion*
Adaptation to new situations	*Respect for the natural environment*
Decision making	*Sustainability*
Autonomous work	*Demonstration of social, professional and moral responsibility and sensitivity to gender issues*
Teamwork	*Critical thinking*
Working in an international environment	*Promoting free, creative and inductive reasoning*
Working in an interdisciplinary environment	
Production of new research ideas	

Search, analysis, and synthesis of data and information, using the necessary technologies
Adaptation to new situations
Autonomous work
Teamwork
Adaptation to new situations
Decision making

3. COURSE CONTENT

1. The Challenges of Civil Protection Education:
   - The importance of education for strengthening the resilience of societies.
   - The limitations of traditional education methods.
   - The need for innovative approaches.
2. New Technologies in Education:
   - Virtual and augmented reality (VR/AR).
   - Artificial intelligence and learning.
   - Collaborative tools and learning platforms.
   - Applications and games.
3. Applications of New Technologies in Civil Protection Education:
   - Disaster simulations and emergency scenarios.
   - First aid and search and rescue training.
   - Public awareness of risks and prevention measures.
   - Development of leadership and collaboration skills.
4. Design and Implementation of Innovative Educational Programs:
   - Development of educational scenarios and activities.
   - Selection of appropriate technological tools.
   - Evaluation of the effectiveness of educational programs.
5. Future Prospects and Trends:
   - The latest developments in civil protection education.
   - The challenges and opportunities presented.
6. Introduction to Intelligent Decision Support Systems:
   - Basic concepts and definitions.
   - Historical overview and evolution of DSS.
   - Types of DSS (database, model, knowledge-based).
7. Cutting-Edge Technologies in DSS:
   - Artificial intelligence (AI) and machine learning (ML).

- Big Data analytics.
- Geographic information systems (GIS).
- Modeling.

8. Applications of DSS in Civil Protection:
- Risk and vulnerability assessment.
- Disaster prediction and early warning.
- Emergency planning and resource management.
- Post-disaster recovery.
- Real-time decision support.

9. DSS Design and Development:
- DSS development process.
- Selection of appropriate technology.
- System architecture design.
- Integration of knowledge and expertise.

10. DSS Evaluation and Optimization:
- Criteria for evaluating DSS effectiveness.
- Evaluation methods.
- DSS optimization based on evaluation results.

11. Cyber Threats and Intelligent Decision Support Systems in Crisis Situations:
- How cyberattacks can exploit vulnerabilities created during crises.
- Critical infrastructure (energy, health, transport), communication systems, humanitarian aid systems.
- Types of attacks: Ransomware, DDoS, phishing, disinformation.
- How cyberattacks can exacerbate the consequences of a crisis.
- Economic impacts: Recovery costs, loss of income.
- Social impacts: Spread of fake news, undermining trust in government authorities.
- Collaboration between cybersecurity and crisis management: The importance of integrating cybersecurity into disaster response plans.
- Development of models for predicting future attacks.

12. Internet of Things and Hardware System Technologies for Crisis and Disaster Impact Management:
- Response automation: Using robots to perform repetitive security tasks.
- Tools and platforms for cybersecurity incident management:
- SIEM (Security Information and Event Management): Collection, analysis, and correlation of security data.
- SOAR (Security Orchestration, Automation, and Response): Automation of threat detection and response processes.
- IoT, Edge Computing, Computer Systems and Networks

13. Ethical dilemmas and challenges in the application of intelligent systems:
- Privacy: Protection of personal data.
- Responsibility: Who is responsible in case of system failure?
- Reliability: How can we ensure that systems make correct decisions?

4. LEARNING & TEACHING METHODS - EVALUATION

TEACHING METHOD *Face to face, Distance learning, etc.*	Face to face, Distance learning
USE OF INFORMATION & COMMUNICATIONS TECHNOLOGY (ICT) *Use of ICT in Teaching, in*	Use of ICT in Teaching and Communication with students digital slides videos

Laboratory Education, in Communication with students	MsTeams/e-class, webmail
TEACHING ORGANIZATION *The ways and methods of teaching are described in detail.* *Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliographic research & analysis, Tutoring, Internship (Placement), Clinical Exercise, Art Workshop, Interactive learning, Study visits, Study / creation, project, creation, project. Etc.* *The supervised and unsupervised workload per activity is indicated here, so that total workload per semester complies to ECTS standards.*	
STUDENT EVALUATION *Description of the evaluation process* *Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Essay / Report, Oral Exam, Presentation in audience, Laboratory Report, Clinical examination of a patient, Artistic interpretation, Other/Others* *Please indicate all relevant information about the course assessment and how students are informed*	Student evaluation languages Greek English Method (Formative or Concluding) Summative Student evaluation methods Written Exam with Problem Solving 50% Teamwork project 50%

Activity	*Workload/semester*
Lectures	39
Essay	60
Study	78
Examinations	3
Total	**180**

5. SUGGESTED BIBLIOGRAPHY

Ι. Βλαχάβας, Π. Κεφαλάς, Ν. Βασιλειάδης, Φ. Κόκκορας, Η. Σακελλαρίου. Τεχνητή Νοημοσύνη - Δ Έκδοση, Εκδόσεις Πανεπιστημίου Μακεδονίας, ISBN: 978-618-5196-44-8, 2020.

Stuart Russell, Peter Norvig. Artificial Intelligence: A Modern Approach (Pearson Series in Artifical Intelligence) 4th Edition, ISBN-13 : 978-0134610993, 2020

W. ERTEL, ΕΙΣΑΓΩΓΗ ΣΤΗΝ ΤΕΧΝΗΤΗ ΝΟΗΜΟΣΥΝΗ, ΓΡΗΓΟΡΙΟΣ ΧΡΥΣΟΣΤΟΜΟΥ ΦΟΥΝΤΑΣ, 2/2019, ISBN: 9789603307969

A. R. Jha Ph.D, Theory, Design, and Applications of Unmanned Aerial Vehicles 1st Edition, CRC Press, 2020, ISBN: 978-0367574239

Shaoshan Liu, Liyun Li, Jie Tang, Shuang Wu, Jean-Luc Gaudiot, Creating Autonomous Vehicle Systems, 2nd edition, Morgan & Claypool, 2020, ISBN: 978-1681739359

Craig J., ΕΙΣΑΓΩΓΗ ΣΤΗ ΡΟΜΠΟΤΙΚΗ, 4η Έκδοση, Εκδόσεις Τζιόλα, ISBN: 978-960-418-734-8, 2020

COURSE OUTLINE HUMANITARIAN ENGINEERING AND RESILIENT SOCIETY

1. GENERAL

SCHOOL	SCHOOL OF ENGINEERING		
DEPARTMENT	PREVENTION AND MANAGEMENT OF CRISIS AND DISASTERS: INNOVATIVE TECHNIQUES IN CIVIL PROTECTION		
LEVEL OF STUDIES	ISCED level 7 – Master's or equivalent level		
COURSE CODE	CP10.1	**SEMESTER**	2nd Semester
COURSE TITLE	Humanitarian Engineering and Resilient Society		

TEACHING ACTIVITIES *If the ECTS Credits are distributed in distinct parts of the course e.g. lectures, labs etc. If the ECTS Credits are awarded to the whole course, then please indicate the teaching hours per week and the corresponding ECTS Credits.*	**TEACHING HOURS PER WEEK**	**ECTS CREDITS**
	3.0	6.0
Please, add lines if necessary. Teaching methods and organization of the course are described in section 4.		

COURSE TYPE *Background, General Knowledge, Scientific Area, Skill Development*	Scientific Area
PREREQUISITES:	NO
TEACHING & EXAMINATION LANGUAGE:	Greek, English (students will be encouraged to complete their assignments in English to improve their communication skills in a foreign language/NATO's official language).
COURSE OFFERED TO ERASMUS STUDENTS:	YES
COURSE URL:	https://eclass.duth.gr/courses/

2. LEARNING OUTCOMES

Learning Outcomes

Please describe the learning outcomes of the course: Knowledge, skills and abilities acquired after the successful completion of the course.

At the end of the course the student will be able to:

- *Understand the fundamental principles of humanitarian engineering and its role in addressing crises, natural disasters, and social challenges.*
- *Analyze the challenges and needs of vulnerable populations in emergency situations and develop sustainable and resilient solutions.*
- *Apply technical and technological solutions to support societal resilience, with a focus on sustainability and innovation.*
- *Develop skills in planning and managing humanitarian projects, considering social, environmental, and economic factors.*
- *Understand the legal and institutional framework of humanitarian action and the importance of international cooperation in relief and recovery programs.*

- *Evaluate the resilience of societies and infrastructures and design strategies for disaster prevention and response.*
- *Collaborate with interdisciplinary teams, contributing to the development and implementation of comprehensive humanitarian solutions.*
- *Cultivate critical thinking and ethical awareness, proposing interventions that promote social cohesion, sustainable development, and equal access to essential services.*

General Skills

Name the desirable general skills upon successful completion of the module

Search, analysis and synthesis of data and information,	*Project design and management*
ICT Use	*Equity and Inclusion*
Adaptation to new situations	*Respect for the natural environment*
Decision making	*Sustainability*
Autonomous work	*Demonstration of social, professional and moral responsibility and sensitivity to gender issues*
Teamwork	*Critical thinking*
Working in an international environment	*Promoting free, creative and inductive reasoning*
Working in an interdisciplinary environment	
Production of new research ideas	

- Search, analysis, and synthesis of data and information, using appropriate technologies
- Adaptation to new situations
- Decision-making
- Independent work
- Teamwork
- Working in an international environment
- Working in an interdisciplinary environment
- Production of new research ideas
- Project design and management
- Respect for diversity and multiculturalism
- Respect for the natural environment
- Demonstration of social, professional, and ethical responsibility and sensitivity to gender issues
- Critical thinking and self-reflection
- Promotion of free, creative, and inductive thinking

3. COURSE CONTENT

The aim of the course is to equip students with the necessary knowledge, skills, and methodological approaches to understand, analyze, and apply techniques and strategies that enhance societal resilience, especially in times of crisis and humanitarian need.

Specifically, the course aims to:

- Provide an understanding of the principles of humanitarian engineering and its relationship with sustainable development and social resilience.
- Explore the ethics of humanitarian engineering through case studies of both successful and failed practices.
- Develop low-cost prototype designs with a focus on human preparedness and protection against natural and technological hazards.

- Analyze the impacts of natural and human-made disasters and explore methods for prevention, mitigation, and response through technological and engineering solutions centered on people and society.
- Apply sustainable technologies and infrastructure that support the resilience of communities, particularly in vulnerable, remote, or underdeveloped areas.
- Build crisis management skills through the organization, design, and implementation of relief and recovery initiatives.
- Study and evaluate international initiatives and institutional frameworks related to humanitarian action, sustainable development, and social resilience.
- Promote collaborative and interdisciplinary approaches through participation in team projects and simulations of real-world humanitarian scenarios.
- Encourage critical thinking and innovative solutions, enabling students to develop new approaches for enhancing societal resilience.

The course emphasizes interdisciplinary collaboration, sustainable development, and the human-centered application of engineering to support communities facing challenges, enhancing their resilience and promoting solutions with social and environmental impact.

4. LEARNING & TEACHING METHODS - EVALUATION

<table>
<tr><td>TEACHING METHOD
Face to face, Distance learning, etc.</td><td>Distance learning (online)</td></tr>
<tr><td>USE OF INFORMATION & COMMUNICATIONS TECHNOLOGY (ICT)
Use of ICT in Teaching, in Laboratory Education, in Communication with students</td><td>PPT slides
Video/Podcast (Audio)
MS Teams
email</td></tr>
<tr><td>TEACHING ORGANIZATION
The ways and methods of teaching are described in detail.
Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliographic research & analysis, Tutoring, Internship (Placement), Clinical Exercise, Art Workshop, Interactive learning, Study visits, Study / creation, project, creation, project. Etc.

The supervised and unsupervised workload per activity is indicated here, so that total workload per semester complies to ECTS standards.</td><td>
<table>
<tr><th>Activity</th><th>Workload/semester</th></tr>
<tr><td>Lecture Topics</td><td>36</td></tr>
<tr><td>Bibliographic research & analysis</td><td>48</td></tr>
<tr><td>Team project work</td><td>60</td></tr>
<tr><td>Assignments</td><td>36</td></tr>
<tr><td>Total</td><td>180</td></tr>
</table>
</td></tr>
<tr><td>STUDENT EVALUATION
Description of the evaluation process</td><td>1. Lecture Topic Quiz (Individual, online multiple-choice quiz) – 20%</td></tr>
</table>

Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Essay / Report, Oral Exam, Presentation in audience, Laboratory Report, Clinical examination of a patient, Artistic interpretation, Other/Others *Please indicate all relevant information about the course assessment and how students are informed*	2. Design Presentation (Group, online project presentation on team's humanitarian engineering topic) – 25% 3. Design Report (Group, online report development on team's humanitarian engineering topic) – 35% 4. Reflection (individual, short essay reflecting on course experience and course-related knowledge application in civil protection) – 20% Student evaluation languages Greek and English (students will be encouraged to complete their assignments in English to improve their communication skills in a foreign language/NATO's official language).

5. SUGGESTED BIBLIOGRAPHY

1. Amadei, B., & Wallace, W. A. (2009). Engineering for Humanitarian Development. IEEE Technology and Society Magazine, 28(4), 6-15.
2. Mazzurco, A., & Daniel, S. (2020). Socio-Technical Thinking of Students and Practitioners in the Context of Humanitarian Engineering. Journal of Engineering Education, 109(2), 243-261.
3. Harbison, J. R. (2021). Engineering a Resilient Society: Adaptation and Innovation for Sustainable Development. Springer.
4. Bhamra, R. S. (2015). Organizational Resilience: Concepts, Integration, and Practice. CRC Press.
5. Redman, C. L., & Miller, T. R. (2015). The Technological Resilience of Cities: Planning for Sustainable and Adaptable Infrastructure. Journal of Planning Education and Research, 35(3), 265-277.

COURSE OUTLINE HOMELAND SECURITY - MIGRATION AND HUMANITARIAN CRISIS

1. GENERAL

SCHOOL	SCHOOL OF ENGINEERING		
DEPARTMENT	PREVENTION AND MANAGEMENT OF CRISIS AND DISASTERS: INNOVATIVE TECHNIQUES IN CIVIL PROTECTION		
LEVEL OF STUDIES	ISCED level 7 – Master's or equivalent level		
COURSE CODE	CP10.2	**SEMESTER**	2th Semester
COURSE TITLE	Homeland Security - Migration and Humanitarian Crisis		

TEACHING ACTIVITIES *If the ECTS Credits are distributed in distinct parts of the course e.g. lectures, labs etc. If the ECTS Credits are awarded to the whole course, then please indicate the teaching hours per week and the corresponding ECTS Credits.*	**TEACHING HOURS PER WEEK**	**ECTS CREDITS**
	3.0	6.0
Please, add lines if necessary. Teaching methods and organization of the course are described in section 4.		

COURSE TYPE *Background, General Knowledge, Scientific Area, Skill Development*	Scientific Area
PREREQUISITES:	NO
TEACHING & EXAMINATION LANGUAGE:	Greek, English
COURSE OFFERED TO ERASMUS STUDENTS:	YES
COURSE URL:	https://eclass.duth.gr/courses/

2. LEARNING OUTCOMES

Learning Outcomes

Please describe the learning outcomes of the course: Knowledge, skills and abilities acquired after the successful completion of the course.

At the end of the course each student will be able to:

- Have acquired sufficient contact, familiarity and knowledge regarding the issue of intense population movement, Migrant-Refugee flows, new types of migrants-refugees on the international, European and national map as a contemporary crisis and at the level of impacts.
- Research and gather information regarding the human and social rights concerning migrants-refugees.
- Study the European-International Treaties, Legal-Institutional Framework, Minorities in Europe and Greece and detailed information on their cultural-national identity.
- Present Social Policies and Models of Integration of Immigrants-Refugees in Greece and Europe, National-European Good Practices, International-European-National Integration Programs for Immigrants-Refugees, Asylum Policies.

- Reflect on and critically approach the issue of Intercultural communication during the period of mass flows and the need to utilize it as a tool of Inclusion and Intercultural mediation and establish the role of the Intercultural Mediator.
- Develop documented and comprehensive judgments on the issue of International-European-National-Social-Public Security and securitization in relation to the migration-refugee issue, Social Control and Public Order, the role of the Security Forces and Armed Forces in border management and issues of national-European defense.
- Study and have a clear picture of the phenomenon of 'Lawlessness'-delinquency during the period of mass migration flows and the need to develop plans, measures and implement policies-strategies of European integration.
- Approach and analyze the concept of Intercultural Management and its implementation policies-strategies.
- Delve into the concept of "Asymmetric Threats", Emergency Situations and Militarization.
- Evaluate key aspects of Intercultural Leadership-Intercultural Leader profile, the issues of discrimination, stereotypes, social exclusion-isolationism, xenophobia and racism.
- Highlight the role of Civil Protection in the prevention and management of crises, risks, disasters.
- Know and develop the individual factors that influence the migration-refugee crisis and to propose good practices-strategies for maintaining and strengthening internal security with Strategic Plans for National-European Security.
- Know sufficiently the legal-institutional framework for internal security and the humanitarian crisis in order to face emergency issues.
- Utilize foreign language material, research, studies, Programs, Articles from scientifically reliable sources with the help of New Technologies.
- Document political discourse, detect and present results of research-studies at the scientific and political level of Homeland security in relation to the Migration-Refugee issue as a Humanitarian crisis

General Skills

Name the desirable general skills upon successful completion of the module

Search, analysis and synthesis of data and information,	*Project design and management*
ICT Use	*Equity and Inclusion*
Adaptation to new situations	*Respect for the natural environment*
Decision making	*Sustainability*
Autonomous work	*Demonstration of social, professional and moral responsibility and sensitivity to gender issues*
Teamwork	*Critical thinking*
Working in an international environment	*Promoting free, creative and inductive reasoning*
Working in an interdisciplinary environment	
Production of new research ideas	

•Respect for diversity, otherness and multiculturalism
• Promotion of free, creative, inductive, coordinated and structured thinking
• Decision-making
• Adaptation to new situations and conditions, especially in times of crisis
• Work in a European and international interdisciplinary environment with reliable scientific-research material
• Ability to exercise scientifically and argumentatively documented criticism
• Production and promotion of new research ideas, design of management policies-strategies

• Search, analysis and synthesis of data and information, also using New Technologies
• Project planning and management with demonstration of social, professional, scientific, ethical responsibility and sensitivity to issues concerning socially vulnerable groups

3. COURSE CONTENT

1. Population movements-Immigration-Refugee flows-Minorities and Politics-New types of migrants-Refugees-Impacts-Islamization
2. European-International Treaties-Legal-Institutional framework
3. Asylum policies-Ministry of Migration and Asylum-Municipalities-NGOs
4. Social control-Securitization-Public Order-Security-Security Bodies
5. Armed Forces-Militarization-Border management-Frontex
6. ¨Asymmetric threats¨ and the migration-refugee crisis, 'Lawlessness'-Criminality and migration policy, Irregular-Illegal migration
7. Human rights and migration-International organizations- Discrimination, Social Exclusion, Xenophobia, Racism
8. Social Policy and Migrants-Refugees- National-European Good Practices-International-European-National Integration Programs for Migrants-Refugees
9. Intercultural Communication-Inclusive Practices
10. Intercultural Mediation as a Tool of Managing the Migrant-Refugee Crisis-Intercultural Mediator Profile
11. Strategic and Intercultural Management-Intercultural Leader Profile
12. Cultural Identity and European Integration-Cultural Differences-Social Inequalities
13. Civil Protection-Homeland Security and Humanitarian Crisis-Political-Strategic-Innovative Management Techniques

4. LEARNING & TEACHING METHODS - EVALUATION

TEACHING METHOD *Face to face, Distance learning, etc.*	Distance learning
USE OF INFORMATION & COMMUNICATIONS TECHNOLOGY (ICT) *Use of ICT in Teaching, in Laboratory Education, in Communication with students*	Use of ICT in Teaching Use of ICT in Communication with students
TEACHING ORGANIZATION *The ways and methods of teaching are described in detail.* *Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliographic research & analysis, Tutoring, Internship (Placement), Clinical Exercise, Art Workshop, Interactive learning, Study visits, Study / creation, project, creation, project. Etc.* *The supervised and unsupervised workload per activity is indicated*	

Activity	***Workload/semester***
Lectures	39
Essay	60
Study	78
Examinations	3
Total	**180**

here, so that total workload per semester complies to ECTS standards.	
STUDENT EVALUATION *Description of the evaluation process* *Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Essay / Report, Oral Exam, Presentation in audience, Laboratory Report, Clinical examination of a patient, Artistic interpretation, Other/Others* *Please indicate all relevant information about the course assessment and how students are informed*	Student evaluation languages: Greek English Method (Formative or Concluding): Summative Student evaluation methods: Written Exam with evaluation of the capture-presentation of documented material and critical approach based on scientific-research material and analytical political-strategic-innovative crisis management techniques, 80% Active participation with evaluation of feedback and involvement in Teleconferences with emphasis on practical scenarios-case studies, 20%

5. SUGGESTED BIBLIOGRAPHY

For each topic, within the framework of the Lectures and student engagement, due to the specificity of the individual topics, websites, relevant links, modern bibliographic sources and scientific articles will be recommended, for information and utilization based on the respective needs of the Postgraduate Program.

COURSE OUTLINE HYDROMETEREOLOGICAL DISASTERS PREDICTION AND MANAGEMENT

1. GENERAL

SCHOOL	SCHOOL OF ENGINEERING		
DEPARTMENT	PREVENTION AND MANAGEMENT OF CRISIS AND DISASTERS: INNOVATIVE TECHNIQUES IN CIVIL PROTECTION		
LEVEL OF STUDIES	ISCED level 7 – Master's or equivalent level		
COURSE CODE	CP10.3	**SEMESTER**	8th Semester
COURSE TITLE	Geotechnical hazards: understanding – hazard assessment – prevention and protection measures		

TEACHING ACTIVITIES *If the ECTS Credits are distributed in distinct parts of the course e.g. lectures, labs etc. If the ECTS Credits are awarded to the whole course, then please indicate the teaching hours per week and the corresponding ECTS Credits.*	**TEACHING HOURS PER WEEK**	**ECTS CREDITS**
	3.0	6.0
Please, add lines if necessary. Teaching methods and organization of the course are described in section 4.		

COURSE TYPE *Background, General Knowledge, Scientific Area, Skill Development*	Scientific Area
PREREQUISITES:	NO
TEACHING & EXAMINATION LANGUAGE:	Greek, English
COURSE OFFERED TO ERASMUS STUDENTS:	YES
COURSE URL:	https://eclass.duth.gr/courses/

2. LEARNING OUTCOMES

Learning Outcomes

Please describe the learning outcomes of the course: Knowledge, skills and abilities acquired after the successful completion of the course.

At the end of the course the student will be able to:

- *Understand the key issues of flood management as well as the processes that govern the generation and propagation of floods.*
- *Address the dynamics of flood risk in a changing climate*
- *Develop comprehensive flood risk management strategies in a changing climate*
- *Implement structural and non-structural measures to reduce flood risks*
- *Develop preparedness and response plans to effectively reduce flood risk*
- *Integrate flood restoration programs into flood risk management strategies*
- *Address emergency flood risk management issues.*
- *Know the impact that climate change will have on the human, natural and built environment, covering key aspects such as water resources, flooding, sea level rise and coasts, health, transport, infrastructure and cities.*

- *Be able to evaluate, propose and implement sustainable adaptation strategies to basic infrastructure and environmental regulations.*

General Skills

Name the desirable general skills upon successful completion of the module

Search, analysis and synthesis of data and information,	*Project design and management*
ICT Use	*Equity and Inclusion*
Adaptation to new situations	*Respect for the natural environment*
Decision making	*Sustainability*
Autonomous work	*Demonstration of social, professional and moral responsibility and sensitivity to gender issues*
Teamwork	*Critical thinking*
Working in an international environment	*Promoting free, creative and inductive reasoning*
Working in an interdisciplinary environment	
Production of new research ideas	

Adaptation to new situations
Decision making
Working in an interdisciplinary environment
Project design and management
Respect for the natural environment
Promoting free, creative and inductive reasoning

3. COURSE CONTENT

1. Introduction to floods, their categories and mechanisms.
2. Analysis of flood hydrological processes (estimation of rainfall losses and the rainfall-runoff mechanism).
3. Hydrological flood channeling.
4. Hydraulic flood simulation with open source software.
5. Analysis and evaluation of technical flood control projects.
6. Analysis of natural flood management solutions.
7. Introduction to the concept of drought
8. Types of drought - Drought Indicators
9. Dynamic evapotranspiration, plant coefficient, effective precipitation, crop water needs.
10. Drought assessment models - water balance
11. Drought and Water Resources Management
12. Climate change and drought
13. Industrial and technical projects to address drought

4. LEARNING & TEACHING METHODS - EVALUATION

TEACHING METHOD *Face to face, Distance learning, etc.*	Face to face
USE OF INFORMATION & COMMUNICATIONS TECHNOLOGY (ICT) *Use of ICT in Teaching, in*	Use of ICT in Teaching Use of ICT in Communication with students

Laboratory Education, in Communication with students	
TEACHING ORGANIZATION *The ways and methods of teaching are described in detail.* *Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliographic research & analysis, Tutoring, Internship (Placement), Clinical Exercise, Art Workshop, Interactive learning, Study visits, Study / creation, project, creation, project. Etc.* *The supervised and unsupervised workload per activity is indicated here, so that total workload per semester complies to ECTS standards.*	
STUDENT EVALUATION *Description of the evaluation process* *Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Essay / Report, Oral Exam, Presentation in audience, Laboratory Report, Clinical examination of a patient, Artistic interpretation, Other/Others* *Please indicate all relevant information about the course assessment and how students are informed*	Student evaluation languages Greek English Method (Formative or Concluding) Summative Student evaluation methods Written Exam with Problem Solving 50% Mid term exams 50%

Activity	*Workload/semester*
Lectures	39
Essay	60
Study	78
Examinations	3
Total	**180**

5. SUGGESTED BIBLIOGRAPHY

1. Τσακίρης Γ. (Υπεύθυνος Έκδοσης), (1995). «ΥΔΑΤΙΚΟΙ ΠΟΡΟΙ: Ι. Τεχνική Υδρολογία», Εκδόσεις Συμμετρία, Αθήνα, ISBN 960-266-003-1.
2. Σακκάς Ι.Γ. (2004). «ΤΕΧΝΙΚΗ ΥΔΡΟΛΟΓΙΑ, Τόμος 1, Υδρολογία Επιφανειακών Υδάτων», Εκδόσεις Αϊβάζη, Θεσσαλονίκη.
3. Spiliotis M., Iglesias A. and Garrote L., 2020. A multicriteria fuzzy pattern recognition approach for assessing the vulnerability to drought: Mediterranean region. Evolving Systems (in print, https://doi.org/10.1007/s12530-020-09332-7
4. Τσακίρης Γ. (2006). Υδραυλικά έργα: Σχεδιασμός και διαχείριση, Εγγειοβελτιωτικά έργα. Εκδόσεις Συμμετρία.

MASTER THESIS

1. GENERAL

SCHOOL	SCHOOL OF ENGINEERING		
DEPARTMENT	PREVENTION AND MANAGEMENT OF CRISIS AND DISASTERS: INNOVATIVE TECHNIQUES IN CIVIL PROTECTION		
LEVEL OF STUDIES	ISCED level 7 – Master's or equivalent level		
COURSE CODE		**SEMESTER**	3rd Semester
COURSE TITLE	Master Thesis		

TEACHING ACTIVITIES *If the ECTS Credits are distributed in distinct parts of the course e.g. lectures, labs etc. If the ECTS Credits are awarded to the whole course, then please indicate the teaching hours per week and the corresponding ECTS Credits.*	**TEACHING HOURS PER WEEK**	**ECTS CREDITS**
		20
Please, add lines if necessary. Teaching methods and organization of the course are described in section 4.		

COURSE TYPE *Background, General Knowledge, Scientific Area, Skill Development*	Scientific Area
PREREQUISITES:	NO
TEACHING & EXAMINATION LANGUAGE:	Greek, English
COURSE OFFERED TO ERASMUS STUDENTS:	YES
COURSE URL:	https://eclass.duth.gr/courses/

2. LEARNING OUTCOMES

Learning Outcomes

Please describe the learning outcomes of the course: Knowledge, skills and abilities acquired after the successful completion of the course.

At the end of the course the student will be able to:

- to have in-depth knowledge of the topics covered by their thesis
- to have a holistic view of the subjects of the Master's program
- to search for and evaluate international bibliography
- to analyze data
- to design policies for the prevention and response to natural disasters

General Skills

Name the desirable general skills upon successful completion of the module

Search, analysis and synthesis of data and information,
ICT Use
Adaptation to new situations
Project design and management
Equity and Inclusion
Respect for the natural environment
Sustainability

Decision making *Autonomous work* *Teamwork* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*Demonstration of social, professional and moral responsibility and sensitivity to gender issues* *Critical thinking* *Promoting free, creative and inductive reasoning*
Adaptation to new situations Decision making Working in an interdisciplinary environment Project design and management Respect for the natural environment Promoting free, creative and inductive reasoning	

3. COURSE CONTENT

Master thesis

4. LEARNING & TEACHING METHODS - EVALUATION

TEACHING METHOD *Face to face, Distance learning, etc.*	Face to face
USE OF INFORMATION & COMMUNICATIONS TECHNOLOGY (ICT) *Use of ICT in Teaching, in Laboratory Education, in Communication with students*	Use of ICT in Teaching Use of ICT in Communication with students
TEACHING ORGANIZATION *The ways and methods of teaching are described in detail.* *Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliographic research & analysis, Tutoring, Internship (Placement), Clinical Exercise, Art Workshop, Interactive learning, Study visits, Study / creation, project, creation, project. Etc.* *The supervised and unsupervised workload per activity is indicated here, so that total workload per semester complies to ECTS standards.*	
STUDENT EVALUATION *Description of the evaluation process* *Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test,*	Oral examination by thesis committee

Activity	***Workload/semester***
Preparation & Writing of thesis	300
Evaluation	50
Literature study and analysis	250
TOTAL	**600**

Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Essay / Report, Oral Exam, Presentation in audience, Laboratory Report, Clinical examination of a patient, Artistic interpretation, Other/Others *Please indicate all relevant information about the course assessment and how students are informed*	

5. SUGGESTED BIBLIOGRAPHY
