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K-FORCE



WP2

PhD models and curricula in EU

Report on compared PhD models and curricula in EU

Deliverable 2.3

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Report 2.3 provides data on the available Ph.D. programmes in Fire Safety Engineering and Disaster Risk Management in EU: This is the starting point for establishing of the PhD curriculum and the content of courses. Based on the needs for teaching staff resources and their competences and WBC needs and EU trends in DRM&FSE PhD studies, DRM&FSE PhD models and curricula in EU will be comparatively analyzed.

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LIST OF PHD PROGRAMMES

Ph.D. programmes in Fire Safety Engineering and Disaster Risk Management

- Fire Safety Engineering
- Lund University – Fire Safety
- The University of Edinburgh – Fire Safety Engineering
- Ghent University – Fire Safety Engineering
- Technical University of Ostrava - Fire Protection and Industrial Safety
- Technical University in Zvolen - Fire Protection and Security

Ph.D. programmes Disaster Risk Management

- Lund University – Systems Safety
- University of Stavanger - Risk management and societal safety
- Delft University of Technology – Safety and Security
- University College London (UCL) - Risk and Disaster Reduction
- University of Žilina - Disaster Management/Crisis Management
- University of Žilina – Rescue Services

LUND UNIVERSITY

FIRE SAFETY

Title	Third-cycle studies in Fire Safety
University/Department	Lund University/Division of Fire Safety Engineering
Country	Sweden
Specific Area	Fire Safety Engineering, Fire Dynamics, Fire testing, Firefighting, Evacuation, Modelling and simulation
Website	http://www.brand.lth.se/
Since	1988
Ph.D. student status	Mostly employed, some industrial PhD-students (employed at companies), scholarship students are possible.
Duration	4 year full time studies or 5 years with 20 % compulsory duties (e.g. teaching)
Credits (courses, thesis, total)	240 credits (courses: at least 60 credits; thesis: at least 120 credits)
Thesis type	Paper + kappa (this is the tradition but not a formal requirement)
Is there option for intermediate title? (e.g. licentiate)	YES, Licentiate degree The requirements for a licentiate are: passed courses of at least 30 credits, and a passed thesis of a scope corresponding to studies of at least 60 credits. The thesis and courses shall comprise at least 120 credits in total.
Admission requirements	<ol style="list-style-type: none"> 1. Student must have been awarded a second-cycle qualification (i.e. Master level), or 2. has satisfied the requirements for courses comprising at least 240 credits of which at least 60 credits were awarded in the second cycle (i.e. Master level), or 3. has acquired substantially equivalent knowledge in some other way in Sweden or abroad <p>In addition, the student must have:</p> <ol style="list-style-type: none"> 1. a second-cycle degree project of at least 30 credits within the field, or 2. a BSc in Fire Protection Engineering amounting to 210 credits. <p>Required language is English.</p>
Brief description	<p>Fire Safety research focuses on the physical and chemical processes involved in the start, growth, spread and extinguishing of fires, interaction between fires and buildings/facilities, systems for preventing or discovering fires or limiting the impact of fires, and evacuation and human behaviour in conjunction with fires.</p> <p>The concept of fire refers to both fires and explosions and to both indoor and outdoor fires. The research on impact also includes undesired emission of flammable, explosive and/or poisonous substances in the industry and transport sectors. The subject also covers fire analysis using both probabilistic and deterministic</p>

	<p>methods and method development for the dimensioning of fire safety. The general aim is to find cost-efficient and innovative methods to keep damage to people, the environment and properties at an acceptable level.</p>
<p>Does it include a Phd training programme for students?</p>	<p>Not a formal training programme, but there are Ph.D. courses which cover some of the main common Ph.D. subjects.</p>
<p>Content</p>	<p>Courses offered include: Introductory workshop for all new PhD students, Introduction to Teaching and Learning in Higher Education, Communicating Science, Project Management in R&D Projects, Reading Skills and the Discourse of the Research Article, Scientific Information Management, Academic Writing for Publication in the Engineering and Science Disciplines, Technology, Risk and Research Ethics, Experimental Methodology, Theory of Science and Methodology of Research, and a range of pedagogical courses.</p> <p>The programmes aim to develop creativity and independence with the ability to formulate advanced research issues, solve problems and plan, carry out and evaluate projects within a set time frame, openness to change, personal networks, both national and international, social skills and communication skills, teaching ability, innovation skills, leadership and entrepreneurship</p>
<p>Learning outcomes</p>	<p>10 learning outcomes in the categories of Knowledge and understanding (e.g. demonstrate broad knowledge and systematic understanding of the research field as well as advanced and up-to-date specialised knowledge in a limited area of this field), Competence and skills (e.g. demonstrate the capacity for scholarly analysis and synthesis as well to review and assess new and complex phenomena, issues and situations autonomously and critically), and Judgement and approach (e.g. demonstrate intellectual autonomy and disciplinary rectitude as well as the ability to make assessments of research ethics. See: http://www.lth.se/english/staff/teaching-and-research/phd-studies/study-plans-and-research-subjects/ for full list of learning outcomes.</p> <p>No detailed requirements are given on the number of publications, but internal routines recommend 4-5 scientific articles (of which at least 3 peer-reviewed and accepted).</p>
<p>Examination method</p>	<p>Public viva. Each PhD-course has an examiner</p> <p>PhD thesis and public defence of PhD-thesis is examined by an examination committee (three persons with recognized competence of which two come from other universities than Lund University). Individual papers are reviewed in the regular journal reviewing process; however, formally this is not part of the examination.</p>
<p>Courses (topic area specific Phd courses, elective and recommended general courses, other courses)</p>	<p>Recommended general and Elective</p> <p>The common recommended courses are to provide a broad knowledge of research methodology and an initial, broad overview of the entire targeted area. So they are not specifically targeted to the thesis area.</p> <p>These courses should be as far as possible be obtained at the beginning of the postgraduate education. Elective courses within the Fire Safety specialization should be selected in the subjects of basic combustion</p>

	<p>and fluid physics, models of fire growth and fire spread, models of fire extinguishing, models for evacuation in the event of fire, human behaviour, methods of risk analysis and decision-making.</p> <p>In addition to the common recommended courses and the thesis work additional elective courses are required to fulfill the requirements for the doctorate and licentiate degree. Neither the optional courses should be given a narrow focus on the dissertation field. These are topic-specific PhD-courses (tailored to the PhD-project and typically organised as “reading courses”). In addition, the PhD-students are able to read any master-level course available at Lund University or other universities. Optional courses can, and should, be chosen among courses offered by other departments at Lund University or at other educational institutions. Such courses may be graduate or undergraduate level.</p>
<p>Teaching/Learning method</p>	<p>PhD-courses (see above) Supervision (planned formal meetings (2/year)) and ad-hoc meetings when PhD-student requires it. Attendance at national and international conferences (writing abstracts, papers and presenting the work) Paper writing for publication in international scientific journals Placement at another international research institution (not formally required).</p>
<p>Other comments</p>	<p>/</p>

THE UNIVERSITY OF EDINBURGH

FIRE SAFETY ENGINEERING

Title	Ph.D. in Fire Safety Engineering
University/Department	The University of Edinburgh, BRE CENTRE for Fire Safety Engineering
Country	Scotland
Specific Area	Fire Safety Engineering
Website	http://www.fire.eng.ed.ac.uk/
Since	1974
Ph.D. student status	Scholarship
Duration	3 years, the University allows an additional twelve-month submission period. The submission period is only for writing-up.
Credits (courses, thesis, total)	At least 540 credits of which a minimum of 420 is at level 12 of the SCQF (Scottish system). Doctorates are available through several routes. The PhD is normally awarded following the successful completion of a thesis requiring the equivalent of three years' full-time research and study to complete.
Thesis type	Monograph
Is there option for intermediate title? (e.g. licentiate)	NO
Admission requirements	To study at postgraduate level, students must normally hold a degree in an appropriate subject, with an excellent or very good classification (equivalent to first or upper second class honours in the UK). If English is not the student's first language, they must provide evidence of competence in written and spoken English.
Brief description	The University of Edinburgh has a long tradition in Fire Safety Engineering Education. This has been characterized by innovative education of several of the current leaders in the field. The Centre has been formed in association with the Building Research Establishment (BRE) to integrate the resources of both institutions and thus provide a new thrust for Fire Safety Education. The required skills of the degree in Fire Safety Engineering from Edinburgh University includes: Understanding of fire behaviour, Understanding of material behaviour, including response to fire, Understanding of structural behaviour, including response to fire, Experience of experimental fire testing, Experience of computer fire models, Experience of design projects
Does it include a Phd training programme for students?	YES. The Engineering Graduate School delivers training specifically developed for students. In addition, there are a very wide range of courses that are delivered by the University's Institute for Academic Development (IAD). This includes courses such as Prepare for doctoral success, Finding Academic Literature, Course on statistics, data management, academic writing, research ethics and integrity, Team building and leadership fundamentals.
Content	Public dissemination of findings is an integral part of research. The Graduate School organises a School Research Conference every year to

	<p>showcase the work being conducted across the School of Engineering. During the conference second year PhD students are required to present a poster and give a short presentation about their research. This is a formal progression requirement</p>
Learning outcomes	<p>Students are expected to publish their work in a timely manner in peer-reviewed academics journals, and to disseminate it through conferences or workshops. No detailed requirements are given on the number of publications.</p>
Examination method	<p>After thesis submission, The examiners are officially appointed and the thesis sent to them. They must independently assess the thesis to decide whether or not to proceed with an oral examination. When the oral examination takes place there is usually with one External and one Internal Examiner.</p> <p>A supervisor can be present, but must not contribute. An independent nonparticipating Chair might also be present. After the oral examination the examiners make a recommendation as to whether or not pass the degree, or the need for any corrections. The College Postgraduate Board of is responsible for making the final decision. Any corrections will need to be approved by the examiner, who sends a Certificate of Corrections for approval by the College Board of Examiners.</p>
Courses (topic area specific Phd courses, elective and recommended general courses, other courses)	<p>The first year of PhD studies is probationary. Supervisors identify training needs, if any, and invite students to attend lectures relevant to your research topic. These lectures may be selected from those offered to MSc students, or may be specialist courses and seminars organised by the School's various research groupings. Towards the end of the first year students are expected to submit a thesis proposal which identifies a specific research topic, reviews the relevant literature, outlines a plan of research to address the topic, and describes progress made so far. The common recommended courses are to provide a broad knowledge of research methodology and an initial, broad overview of the entire targeted area. Specialized courses in Fire Safety Engineering include areas such as Fire Science & Fire Dynamics, Fire Science Laboratory, Fire Safety Engineering Design, Structural Design for Fire, Fire Safety Engineering Analysis & Design, Fire Investigation and Failure Analysis.</p>
Teaching/Learning method	<p>PhD-courses (see above)</p> <p>Supervision and ad-hoc meetings when PhD-student requires it.</p> <p>Attendance at national and international conferences (writing abstracts, papers and presenting the work)</p> <p>Paper writing for publication in international scientific journals</p>
Other comments	/

GHENT UNIVERSITY

FIRE SAFETY ENGINEERING

Title	Doctor of Fire Safety Engineering
University/Department	Ghent University/Department of Flow, Heat and Combustion Mechanics
Country	Belgium
Specific Area	Fire Safety Engineering, Combustion, Modelling
Website	http://www.ugent.be/ea/floheacom/en/research/groups/fire
Since	-
Ph.D. student status	Employment situation varies according to the way the PhD is financed, i.e., scholarship recipients (in Dutch: 'bursalen'), or scientific staff working within the framework of a promotor's project, development cooperation or a Special Research Fund mandate ('BOF').
Duration	Doctoral research at Flemish universities usually takes a minimum of 4 years.
Credits (courses, thesis, total)	This includes on the one hand the doctoral programme (60 credits), which leads to a research training certificate, and on the other hand work linked to the preparation of a doctorate thesis, which leads to the academic qualification of doctor following thesis examination.
Thesis type	Generally a standalone publication in book form. A compilation of peer-reviewed scientific papers is also allowed
Is there option for intermediate title? (e.g. licentiate)	NO
Admission requirements	A general admission requirement for enrolment for the PhD and the Doctoral Training Programme is a Master's degree ('new structure') or an equivalent degree from the 'old structure': a second cycle academic degree or Master's degree (university or university college) or a Master of Science in Engineering ('burgerlijk ingenieur polytechnicus') or a Licentiate's degree obtained from the Royal Military Academy. Holders of a foreign degree need to complete an admission procedure during which the academic aspects (equivalence of degree, research proposal, language skills) are evaluated. Holders of a Belgian (or Luxemburg/Dutch) degree can apply through a simplified procedure. The doctoral dissertation is written either in Dutch or English. However, after a substantiated and written request from the doctoral student, permission may be granted by the Faculty Board for the dissertation to be written in another language.
Brief description	The Doctor in fire safety engineer understands and applies fire safety engineering concepts, including engineering principles, rules and expert judgement based on a scientific appreciation of the fire phenomena, of the effects of fire and of the reaction and behaviour of people.
Does it include a Phd training programme for students?	YES
Content	In the combustion, fire and fire safety group group, the following

	<p>research topics are addressed:</p> <p><i>Numerical simulations of non-premixed turbulent combustion</i></p> <ul style="list-style-type: none"> • Turbulence-chemistry interaction: transported PDF methodology • (Auto-)ignition and lifted flame simulations by means of LES/CMC • Spray combustion • Differential diffusion effects in combustion <p><i>Fire</i></p> <ul style="list-style-type: none"> • Numerical simulation of smoke and gas movement in compartment fires in complex buildings • Flame spread simulations • Car park fire safety • Full scale fire tests • Real-time fire development prediction
Learning outcomes	<p>The Doctoral training programme is structured in order to achieve certain learning outcomes. Students will need to follow minimum 3 specialist courses and max 3 additional courses In addition to 3 seminars. They would have to have three compulsory presentations/posters at conferences and 1 article/chapter/book publication. They are required to provide an annual progress report and a public defense.</p>
Examination method	<p>Faculty Board checks whether all conditions are met and appoints Examination Committee (EC). The EC evaluates if the student is admitted or not to a public defense. After public defense, there is a Deliberation of the EC (including Doctoral Training Programme) and eventually a proclamation</p>
Courses (topic area specific Phd courses, elective and recommended general courses, other courses)	<p>General recommended or mandatory courses and seminars through the Phd Training Programme. General courses may include data manipulation and analysis, imaging and modelling, scientific computing, etc. No specific Phd courses in Fire Safety engineering but students can choose from courses at master level. In the Fire Safety Engineering area, several courses are available, namely Active Fire Protection, Detection and Suppression, Smoke and Heat Control, Interaction between People and Fire, Passive Fire Protection, Performance-Based Design, Fire Dynamics, FSE Based Firefighting, Risk Management, Fire Safety and Legislation, Industrial Fire Protection and Explosions, Thermodynamics, Heat and Mass Transfer, etc.</p>
Teaching/Learning method	<p>Phd courses, presentations at conferences, scientific publications.</p>
Other comments	<p>/</p>

TECHNICAL UNIVERSITY OF OSTRAVA

FIRE PROTECTION AND INDUSTRIAL SAFETY

Title	Fire Protection and Industrial Safety
University/Department	VŠB - Technical University of Ostrava/Faculty of Safety Engineering
Country	Czech republic
Specific Area	Fire protection, industrial safety
Website	https://www.vsb.cz/cs/uchazeci/studijni-programy/programmeDetail?programmId=9&academicYearId=56
Since	1968
Ph.D. student status	Student with scholarship (full-time)/ Student without scholarship (distance)
Duration	3-4 years (full-time)/max 7 years part-time(distance)
Credits (courses, thesis, total)	60 credits per year 110 credits in total (3 years)/ 170 in total (4 years) from exams, 10 for thesis
Thesis type	Monograph/3 papers as primary author (can be in almanac)
Is there option for intermediate title? (e.g. licentiate)	NO
Admission requirements	Master's degree programs: Fire Protection and Safety Techniques in Industry, Safety Engineering, Safety Planning, Technical Security of Persons and Property, and other fields including security features
Brief description	Doctoral study in the Fire Protection and Industrial Safety program is the highest degree of university education for fire protection and security.
Does it include a Phd training programme for students?	YES (full-time)/NO(distance)
Content	The study is based on the multidisciplinary nature of the discipline and its complexity and therefore it has an expanding and deepening character which will allow not only to manage in detail the scientific principles, methods and tools of the specific specialization of the doctoral student but also to understand the context in the broad context of scientific discipline and relations with other natural, And social sciences. At present, it is possible to study in one field of study - Fire Protection and Safety.
Learning outcomes	The study program prepares professionals who are able to identify and evaluate sources of fire, explosions, industrial accidents and natural disasters at a high level in the field of industrial safety, fire protection and crisis management, qualitatively and quantitatively analyze the level of risk, find, apply and evaluate the means of prevention And protect, design and implement means of eliminating the consequences of emergencies, manage the theory of crisis management, emergency planning and risk management. In addition to the acute endangering area, graduates will also be able to deal with chronic health risks, such as the work environment, and the risk of deliberate action. The acquired

	skills will enable graduates to take part in solving the most serious theoretical and practical problems in the areas of fire protection, industrial safety, occupational safety and health and protection of the population. The used techniques include both experimental laboratory and real-world systems and theoretical studies.
Examination method	Public viva defence in front of committee
Courses (topic area specific Phd courses, elective and recommended general courses, other courses)	Mathematical Methods in Safety Engineering, Process Engineering, Selected Chapters from Physics, Selected Chapters from Chemistry, Risk, Analysis, Physical Chemistry of Combustion and Explosion, Hydromechanics, Integrated Management Systems, Crisis Management, Mathematical Theory of Reliability, Materials Engineering from the Point of view of Safety and Reliability, Environmental Measurement and Monitoring, Hazard and Risk Science, Heat and Mass Transfer in Fire Protection, Spectroscopic, Methods in Fire Protection and Safety and Security Engineering, Thermomechanics, Toxicology, Fundamentals of Modelling in Fire Protection, Safety of Nuclear Facilities, Safety of Technological Processes, Territorial Security and Its Management, Security Planning, CBRN, Safety, Fire Dynamics, Geoinformation Technologies and Security, Chemistry of Combustion and Extinguishing, Human Factor in Industrial Safety, Management of Fire and Explosion Risks, Dangerous Substances and Preparations, Civil Protection, Radiation Protection, Water Infrastructure Protection, Fire Safety Equipment, Fire-Technical Properties of Materials, Fire Safety, Fire Safety of Buildings and Technologies, Major Accident Prevention, Explosion Prevention of Manufacturing Equipment, Natural Disasters and Handling of Them, Psychological Aspects of Safety, Heat Exchange in Fire Protection, Tactics for Incident Handling, Technical Means of Fire Protection, Technical Rescue Systems, Influence of Crisis Situations on Man, Influence of the Environment on Man and OSH
Teaching/Learning method	PhD-courses (see above) Supervision (planned formal meetings (2/year)) and ad-hoc meetings when PhD-student requires it. Attendance at national and international conferences (writing abstracts, papers and presenting the work) Paper writing for publication in international scientific journals
Other comments	

TECHNICAL UNIVERSITY IN ZVOLEN

FIRE PROTECTION AND SECURITY

Title	Fire Protection and Security
University/Department	Department of Fire Protection of the Faculty of Wood Sciences and Technology at the TU in Zvolen
Country	Slovakia
Specific Area	Rescue services
Website	http://www.tuzvo.sk/sk/organizacna_struktura/drevarska_fakulta/organizacne_clenenie/katedry/katedra_poziarnej_ochrany/profil_katedry/profil_katedry.html
Since	1998
Ph.D. student status	Student with scholarship (full-time)/ Student without scholarship (distance)
Duration	3 year full time studies or 4 years part-time (distance) studies
Credits (courses, thesis, total)	Total 180, courses 60, thesis 120
Thesis type	Monograph
Is there option for intermediate title? (e.g. licentiate)	NO
Admission requirements	Student must have completed education II. Degree in Fire Protection and Security fields. The applicant 's assessment shall take into account his / her learning outcomes Previous study, Possible publishing activities and also participation in student scientific and professional conferences are a plus.
Brief description	Study program of III. Degree - Fire Protection and Security Graduate Profile Graduates know the research and management methods, acquire knowledge of individual scientific and creative activity in the field of safety and security systems. They are able to formulate any scientific issue and present their research results. Employment Graduates find employment on a national and international level as specialists and managers within Fire and Rescue Service as well as in other safety system-oriented organizations. They might even find employment in the field of education, science and research, certification and projection or as academics at universities.
Does it include a Phd training programme for students?	NO
Content	The programme aims to develop creativity and independence with the ability to formulate advanced research issues, solve problems and plan, carry out and evaluate projects within a set time frame, openness to

	change, personal networks, both national and international, social skills and communication skills, teaching ability, innovation skills. Graduates find employment on a national and international level as specialists and managers within Fire and Rescue Service as well as in other safety system-oriented organizations. They might even find employment in the field of education, science and research.
Learning outcomes	No detailed requirements are given on the number of publications, but internal routines recommend 3 scientific articles (of which at least 2 peer-reviewed and accepted).
Examination method	Public viva. Each PhD-course has an examiner PhD thesis and public defence of PhD-thesis is examined by an examination committee (three persons with recognized competence of which two come from other universities). Individual papers are reviewed in the regular journal reviewing process; however, formally this is not part of the examination.
Courses (topic area specific Phd courses, elective and recommended general courses, other courses)	Recommended study plan for PHD study. English language Methods of scientific work Theory of burning and fire dynamics Dissertation Exam Dissertation a Dissertation thesis defence Compulsory Optional Objects Applied physicochemical analytical methods Safety risks in technologies Change management Mathematical - computer simulation And verification of computer models Methodological procedures for dealing with emergency situations Methods of operational analysis in scientific work modelling And optimization of technological processes and their security Protection of structures against fire, weather And biological influences Fire - technical characteristics Materials and their assessment Design and construction of fire and a Security measures Human resources development Technical equipment and safety of technological systems Theoretical aspects of managing rescue activities Theory and risk management Thermodynamic processes at high temperatures Selected chapters of crisis management Selected chapters from mathematical analysis Attendance at national and international conferences (writing abstracts, papers and presenting the work)
Teaching/Learning method	PhD-courses (see above) Supervision and ad-hoc meetings when PhD-student requires it. Attendance at national and international conferences (writing abstracts, papers and presenting the work) Paper writing for publication in international scientific journals
Other comments	/

LUND UNIVERSITY

SYSTEMS SAFETY

Title	Third-cycle studies in Systems Safety
University/Department	Lund University/Division of risk management and system safety
Country	Sweden
Specific Area	Risk management, risk assessment, crisis management, safety in sociotechnical systems,
Website	http://www.lth.se/english/staff/teaching-and-research/phd-studies/
Since	Around 2005
Ph.D. student status	Mostly employed at division, some industrial PhD-students (employed at a company) and a few scholarship students.
Duration	4 year full time studies or 5 years with 20 % compulsory duties (e.g. teaching).
Credits (courses, thesis, total)	240 credits (courses: at least 60 credits; thesis: at least 120 credits)
Thesis type	Paper + kappa (is the tradition but not a formal requirement)
Is there option for intermediate title? (e.g. licentiate)	YES, Licentiate degree The requirements for a licentiate are: passed courses of at least 30 credits, and a passed thesis of a scope corresponding to studies of at least 60 credits. The thesis and courses shall comprise at least 120 credits in total.
Admission requirements	<ol style="list-style-type: none">1. Student must have been awarded a second-cycle qualification (i.e. Master level), or2. has satisfied the requirements for courses comprising at least 240 credits of which at least 60 credits were awarded in the second cycle (i.e. Master level), or3. has acquired substantially equivalent knowledge in some other way in Sweden or abroad <p>In addition, the student must have:</p> <ol style="list-style-type: none">1. a second-cycle degree project of at least 30 credits within the field, or2. a BSc in Fire Protection Engineering amounting to 210 credits.
Brief description	Safety and risk are closely related and encompass the constant work in a sociotechnical system to prevent risks developing into accidents and crises. A key aspect of the subject is analysis and understanding of how and why accidents and crises come about and the actions taken as a result by social agents. However, knowledge about the safety and resilience of a system is not only generated through study of accidents and crises. Another field of study is the daily assessments of operative sociotechnical systems. In order to understand and study Systems Safety you need to be able to analyse, assess and then control and steer an activity in relation to risks and the desired safety. In addition, the subject includes the development of methods aiming to rectify problems identified in the research.

	<p>Risk management entails systematic and continuous work to eliminate, reduce and control risks in complex systems. Complex systems are defined as sociotechnical systems based on components that may be complex systems in themselves – systems of the system. Furthermore, no single agent can have full knowledge of all processes in a complex system and no single agent can take responsibility for the entire system. An essential aspect of a sociotechnical system is that it involves several agents, is flexible and can be adapted to dynamic changes, and can solve a certain task or function. Examples of complex systems are a process plant, an infrastructure system or a crisis management system in a community. The third-cycle programme is interdisciplinary and aims to comprise theories, methods and modelling focusing on systems theory, complex adaptive systems, resilience and methods of risk and vulnerability and risk-informed decision support.</p>
<p>Does it include a Phd training programme for students?</p>	<p>Not a formal training programme, but there are Ph.D. courses which cover some of the main common Ph.D. subjects.</p>
<p>Content</p>	<p>Courses offered include: Introductory workshop for all new PhD students, Introduction to Teaching and Learning in Higher Education, Communicating Science, Project Management in R&D Projects, Reading Skills and the Discourse of the Research Article, Scientific Information Management, Academic Writing for Publication in the Engineering and Science Disciplines, Technology, Risk and Research Ethics, Experimental Methodology, Theory of Science and Methodology of Research, and a range of pedagogical courses.</p>
<p>Learning outcomes</p>	<p>10 learning outcomes in the categories of Knowledge and understanding (e.g. demonstrate broad knowledge and systematic understanding of the research field as well as advanced and up-to-date specialised knowledge in a limited area of this field), Competence and skills (e.g. demonstrate the capacity for scholarly analysis and synthesis as well to review and assess new and complex phenomena, issues and situations autonomously and critically), and Judgement and approach (e.g. demonstrate intellectual autonomy and disciplinary rectitude as well as the ability to make assessments of research ethics. See: http://www.lth.se/english/staff/teaching-and-research/phd-studies/study-plans-and-research-subjects/ for full list of learning outcomes.</p>
<p>Examination method</p>	<p>Public viva. Each PhD-course has an examiner PhD thesis and public defence of PhD-thesis is examined by an examination committee (three persons with recognized competencies of which two come from other universities than Lund University). Individual papers are reviewed in the regular journal reviewing process; however, formally this is not part of the examination.</p>
<p>Courses (topic area specific Phd courses, elective and recommended general courses, other courses)</p>	<p>Recommended general and Elective Recommended general: The recommended general courses are intended to provide students with broad knowledge of research methods and a first broad overview of the whole specialisation. This</p>

	<p>means that they are not specifically focused on the field of the thesis project. As far as possible, these courses should be completed at the beginning of the programme.</p> <p>Example of courses include: Basic risk/safety-related courses (depending on focus of previous degree), Theory of science, scientific method, literature review, specific methods, academic writing, pedagogical courses,</p> <p>Elective: Examples of courses include complex systems, design theory, risk governance, resilience, etc. These are topic-specific PhD-courses (tailored to the PhD-project and typically organised as “reading courses”). In addition, the PhD-students are able to read any master-level course available at Lund University or other universities.</p>
<p>Teaching/Learning method</p>	<p>PhD-courses (see above)</p> <p>Supervision (planned formal meetings (2/year)) and ad-hoc meetings when PhD-student requires it.</p> <p>Attendance at national and international conferences (writing abstracts, papers and presenting the work)</p> <p>Paper writing for publication in international scientific journals</p> <p>Placement at another international research institution (not formally required)</p>
<p>Other comments</p>	

UNIVERSITY OF STAVANGER

RISK MANAGEMENT AND SOCIETAL SAFETY

Title	PhD programme in risk management and societal safety
University/Department	University of Stavanger/
Country	Norway
Specific Area	Risk management, Societal safety, Industrial economics, Urban development and design
Website	http://www.uis.no/research-and-phd-studies/phd-studies/phd-programme-in-science-and-technology/risk-managment-and-societal-safety/ & http://www.uis.no/getfile.php/Forskerutdanning/Engelsk/PhD%20guide%20engelsk%20-%20Endelig%20revisjon%202015%20PDF.pdf & http://www.uhr.no/documents/vel.bed.dr.gr.eng_cjs_1.pdf
Since	?
Ph.D. student status	Mostly employed, financed through research grants, some get funding from other sources and are thus not employed at the university (The UiS requirement is that external funding must cover an amount in line with the Research Council of Norway's round sum for funding).
Duration	3 year full time studies or 4 years with 25% compulsory duties (e.g. teaching)
Credits (courses, thesis, total)	180 credits (30 credits of courses, 150 credits of research)
Thesis type	Compilation thesis or monography but compilation is the traditional approach.
Is there option for intermediate title? (e.g. licentiate)	No
Admission requirements	To be admitted to the PhD programme, applicants must have a five year masters degree or its equivalent. Applicants must have a strong academic background. Both the grade for the masters thesis and the weighted average grade of the masters degree, must individually be equivalent to or better than a B grade.
Brief description	<p>The PhD programme in Risk Management and Societal Safety is an interdisciplinary co-operation between the Faculty of Science and Technology and the Faculty of Social Sciences. This co-operation makes it possible to approach the subject from different vantage points, and technical, financial and social scientific approaches are incorporated in the programme</p> <p>This subject area deals with principles, theories and methods of analysis, assessment, communication and management of risk and safety. Risk is viewed in a broad perspective with a focus on risk management in projects and companies as well as overall structures and societal safety. A technical, economic and social scientific approach is taken. To ensure a holistic approach to risk</p>

	<p>in complex systems and good utilization of resources, a multidisciplinary approach is emphasized.</p> <p>Central thematic areas are risk and vulnerability analysis, risk acceptance issues, risk management, emergency preparedness planning and crisis management, social planning, regulation and safety, contracts and sales, vulnerability, technology and organization, risk perception, management of uncertainty and decision analysis.</p> <p>Within the area of risk analysis and management, the focus has traditionally been on a technical approach to risk and vulnerability analysis and risk management, but in recent years risk and vulnerability together with the development of risk analysis and societal safety have been viewed in a broader perspective within this academic environment.</p> <p>The petroleum industry has been and continues to be important in applicable research issues. The amount of research directed at other applications is also significant and increasing and includes themes such as traffic safety, patient safety, operational risk in finance and air safety.</p> <p>Within the area of financial risk management, there is the financial approach to the effects of risk, uncertainty and risk management and the significance of regulations. The petroleum industry is also important here for applicable research issues, but studies are also ongoing into a large number of other industries, sectors and markets including fishing and fish farming, energy, finance, agriculture, medicine and various levels in the value chain such as suppliers, retailers and exporters.</p> <p>Within the area of societal safety, research themes are largely directed at risk and vulnerability analysis and management particularly in relation to public bodies and regulatory issues within areas such as transport, communication, health and emergency preparedness.</p>
Does it include a Phd training programme for students?	No
Content	Completion of research documented by the doctoral thesis, disputation, Dissemination e.g. through participation at conferences with presentations, research/study abroad and preparation of scientific papers.
Learning outcomes	12 learning outcomes in the categories of Knowledge (e.g. can evaluate the suitability and application of different methods and processes in research and development projects in the field), Skills (e.g. can carry out research and scholarly development work of high international standard) and General competencies (e.g. can understand important issues connected with the management of complex interdisciplinary assignments and projects)

Examination method	Each PhD-course has an examiner PhD thesis and public defence of PhD-thesis is examined by an examination committee with three members, on the recommendation of the academic staff in the discipline concerned. At least one member should be a person with no connection to the institution. If possible, at least one member should be from a foreign educational institution. A trial lecture is also given by the PhD candidate and examined by the committee. This is about demonstrating the doctoral candidate's ability to impart to others the knowledge gained through his/her research. Individual papers are reviewed in the regular journal reviewing process; however, formally this is not part of the examination.
Courses (topic area specific Phd courses, elective and recommended general courses, other courses)	1) 10 credit programme courses (Philosophy of science and ethics (5 credits) and Innovation and project comprehension (5 credits). 2) 10 credit study courses (Foundational issues in risk management). 3) 10 credit project courses (Advanced topics in risk management, Advanced topics in societal safety, Advanced topics in industrial economics, or Advanced topics in urban planning and design). The content of project courses is customized according to the needs of the PhD project.
Teaching/Learning method	Normally, PhD candidates spend at least three months of study at a reputed foreign educational or research institution.
Other comments	Applicants, who are not fully funded through scholarship schemes, must produce documentation assuring that a minimum of 50% of their working hours during the PhD programme can be used for PhD education and that a minimum of one year can be allocated to full time studies

DELFT UNIVERSITY OF TECHNOLOGY

SAFETY AND SECURITY

Title	PhD in Safety and Security Science
University/Department	Delft University of Technology
Country	The Netherlands
Specific Area	Safety, security risk in areas such as Critical infrastructures, process and nuclear industry, Transport sector, Emergency response, Construction and manufacturing sector, Health care sector.
Website	http://graduateschool.tudelft.nl/fileadmin/Files/studentenportal/Graduate_School/PhD-Guidebook_web_def.pdf & http://www.graduateschool.tudelft.nl/ & http://www.tbm.tudelft.nl/fileadmin/Files/studentenportal/Graduate_School/Doctoral_Regulations_TUD.pdf
Since	1984
Ph.D. student status	Doctoral Programmes can be funded in several ways: 1. Working at the university: Often, doctoral candidates are employed on four-year contracts at their supervisor's department, where they are expected to also spend time on teaching activities. 2. Bring your own funding: If there are no PhD positions available in your area of interest, you will have to find your own funding. This could be a scholarship or a grant. 3. Working for an employer: Employers sometimes provide financial support when their employees become doctoral candidates at TU Delft.
Duration	Four years studies of which 10-15% can be expected to relate to activities not directly related to own project.
Credits (courses, thesis, total)	-
Thesis type	-
Is there option for intermediate title? (e.g. licentiate)	No
Admission requirements	TU Delft Doctoral Regulations a doctoral candidate should be in possession of a Dutch Master's degree
Brief description	Management of safety and security in the current information era and complex socio-technical society is still inadequate. Its deficiencies are shown by the still frequently occurring small and large accidents, disturbances in organisations and networks, and intentional malicious events in our societies. It is our vision that research and education on safety and security science will contribute substantially to the understanding and decrease of these phenomena, resulting in a more sustainable society.
Does it include a Phd	Yes

training programme for students?	
Content	The Doctoral Education Skills Training Programme. Includes courses on Research skills, Discipline-related skills, and Transferable skills.
Learning outcomes	The following criteria apply to the awarding of the designation cum laude: a. the doctoral research conducted is pioneering and innovative; b. the candidate has reached the result independently; c. the dissertation was completed within a reasonable period of time; d. the candidate's publications and appearances in the scientific community have made an impression on leading colleagues; e. the candidate has preferably also demonstrated the implications of his research for technology and science.
Examination method	A doctoral committee examines the thesis. The committee consists of at least six and at most eight members and is composed as follows: a. the Rector Magnificus or a member of the Doctoral Examination Working Committee as chairperson; b. the promotor; c. at least four independent members, as described in 12.2; d. possibly also an additional promotor, copromotor or another member.
Courses (topic area specific Phd courses, elective and recommended general courses, other courses)	Research skills, Discipline-related skills, and Transferable skills. Mandatory courses: PhD Start-up & One Career Development course.
Teaching/Learning method	-
Other comments	-

UNIVERSITY COLLEGE LONDON (UCL)

RISK AND DISASTER REDUCTION

Title	PhD in Risk and Disaster Reduction
University/Department	University College London (UCL), Institute of Risk and Disaster Reduction (IRDR)
Country	Great Britain
Specific Area	Research, research communication, public policy, (re)insurance, catastrophe modelling, risk management, international development, humanitarian assistance, engineering, public policy
Website	http://www.ucl.ac.uk/prospective-students/graduate/research/degrees/risk-disaster-reduction-mphil-phd & http://www.ucl.ac.uk/rdr/teaching & http://www.grad.ucl.ac.uk/codes/DoctoralSchool-Handbook-1617.pdf
Since	?
Ph.D. student status	Student (not employed). Through Funded projects (Institution pays tuition fees), Self-funded or Externally funded Graduate Research Scholarships are available to apply for (20 each year).
Duration	3 year full time studies or 5 years part time. Including up to 180 hr/year of teaching (against payment)
Credits (courses, thesis, total)	-
Thesis type	100 000 word thesis (monography).
Is there option for intermediate title? (e.g. licentiate)	No
Admission requirements	A minimum of an upper second-class UK Bachelor's degree in a relevant discipline or an overseas qualification of an equivalent standard. E.g. requirements from students with Swedish background: Bachelor's degree or Professional degree with 60 points (90 ECTS) in the major subject and a combined total of at least 120 points (180 ECTS), plus at least 20 points (30 ECTS) of further higher level study; Bachelor's degree or Professional degree with 60 points (90 ECTS) in the major subject and a combined total of at least 120 points (180 ECTS), with at least 40 points (60 ECTS) of relevant individual subjects passed at väl godkänd (Pass with distinction). I.e. total of 5 years (300 ECTS) higher educational studies.

	An adequate level of English proficiency – Standard English corresponding to Overall grade of 6.5 with a minimum of 6.0 in each of the subtests on International English Language Testing System (IELTS) or Overall score of 92 with 24/30 in reading and writing and 20/30 in speaking and listening on Test of English as Foreign Language (TOEFL).
Brief description	Reducing the impact of disasters globally presents a huge challenge that requires co-ordinated and collaborative action. This programme is designed for PhD students who wish to improve humanity's understanding of risk and to overcome the scientific, engineering, technical, social, health and political barriers to increasing resilience to disasters.
Does it include a Phd training programme for students?	Yes – the Doctoral Skills Development Programme
Content	The purpose of the Doctoral Skills Development Programme is to give the student the opportunity to expand his/her generic research skills and personal transferable skills. Students should be aiming to participate in the Doctoral Skills Development Programme and/or appropriate other activities to a degree equivalent to two weeks per year.
Learning outcomes	<p>1. A thesis for the awards of EngD or PhD degree shall be examined in accordance with the criteria prescribed by UCL and the thesis shall demonstrate that it:</p> <ul style="list-style-type: none"> a) is genuinely the work of the candidate; b) shows a student's capacity to pursue original research in the field of study based on a good understanding of the research techniques and concepts appropriate to the discipline; c) embodies the results of a research programme which may reasonably be expected of a student after three years of full-time study or the part-time equivalent, formulated and carried out by the student in consultation with the supervisors; d) consists of a student's own account of their investigations, the greater proportion of which shall have been undertaken during the period of registration under supervision for the degree; e) represents a distinct and significant contribution to the subject, whether through the discovery of new knowledge, the connection of previously unrelated facts, the development of new theory, or the revision of older views; f) shows the exercise of critical judgement with regard to both a student's own work and that of other scholars in the field; g) is an integrated whole and presents a coherent argument; h) gives a critical assessment of the relevant literature, describes the method of research and its findings, includes discussion on those findings and indicates in what respects they appear to the student to advance the study of the subject; and, in so doing, demonstrates a deep and synoptic understanding of the field of study, (a student being able to place the thesis in a wider context), objectivity and the capacity for judgement in complex situations and autonomous work in that field. i) is satisfactory in its literary and/or technical presentation and structure with a full bibliography and references;

	<p>j) takes due account of previously published work on the subject;</p> <p>k) makes clear the sources from which information has been derived, the extent to which the work of others has been used, and the areas which are claimed as original;</p> <p>l) contains an element which might, after any necessary revision, merit publication in a medium appropriate to the discipline (for example as a monograph or as a number of articles in learned journals);</p> <p>m) shows a student's ability to design and implement an independent research project.</p> <p>2. A series of papers, whether published or otherwise, is not acceptable for submission as a thesis. Research work already published, or submitted for publication, at the time of submission of a thesis, either by a student alone or jointly with others, may be included in the thesis. The published papers themselves may not be included in the body of a thesis but may be adapted to form an integral part of a thesis and thereby make a relevant contribution to the main theme of a thesis. Publications derived from the work in a thesis may be bound as supplementary material at the back of a thesis.</p>
<p>Examination method</p>	<p>Defence to an expert panel of a 100,000 word thesis. The student is expected to submit a thesis for examination within a period of one calendar year (or two years in the case of part-time students) after the end of the fee-paying enrolment period.</p> <p>Two examiners will be appointed for each candidate. One of the examiners shall be external to UCL; the other shall normally be a member of the academic staff of UCL.</p> <p>The examiners prepare independent preliminary reports on the thesis, conduct an oral examination and submit a final, joint report to UCL. If the thesis fulfils the criteria and the student satisfies the examiners in all other parts of the examination, the student has passed the research component. If necessary the student may have make minor amendments within three months and re-submitted to the examiners, or re-present a revised version of the thesis, or re-present the same thesis.</p>
<p>Courses (topic area specific Phd courses, elective and recommended general courses, other courses)</p>	<p>As part of the Doctoral Skills Development Programme e.g. the following elective courses are offered "Introduction to Doctoral Skills Development and the Research Student Log", "Critical Thinking and the Researcher", "Introduction to Qualitative Research", "Online Research Skills Modules", "Online Training Videos", "Library Services – Using Electronic Resources", "IT Skills", "Statistics For Researchers", "Writing Skills for New PhD Researchers", "Project Management", "Academic Writing", "Leadership in Action", "Conference Abstracts and Posters", "Generating Grant Funding", "Philosophy of Science Workshop Programme", "Stand and Deliver: Giving Effective Presentations", etc.</p> <p>Departmental courses are also available</p>
<p>Teaching/Learning method</p>	<p>Access to Supervisory team (Principal supervisor, Subsidiary supervisor, Departmental graduate tutor.</p> <p>Access to Doctoral Skills Development Programme and/or</p>

	departmental courses Use of Research student log
Other comments	The Research Student Log is an online project management tool designed to assist you throughout your degree programme at UCL. Its use is mandatory for all UCL research degree students and it provides a framework for planning and recording your research progress and scheduled supervisory meetings, together with help in analysing, planning and charting evidence of your academic and generic skills development

UNIVERSITY OF ŽILINA

DISASTER MANAGEMENT/CRISIS MANAGEMENT

Title	Third-cycle studies in Disaster Management/Crisis Management
University/Department	University of Žilina/Faculty of Security Engineering/Department of Crisis Management
Country	Slovakia
Specific Area	Disaster Management, Crisis Management, Risk Theory
Website	http://fbi.uniza.sk/en/index.php?option=com_k2&view=item&layout=item&id=447&Itemid=546
Since	2006
Ph.D. student status	Student with scholarship (full-time)/ Student without scholarship (distance)
Duration	3 year full time studies or 5 years part-time (distance) studies
Credits (courses, thesis, total)	180
Thesis type	Monograph
Is there option for intermediate title? (e.g. licentiate)	NO
Admission requirements	Graduating Of Crisis management study MSc programme or related study programme Admission exam (study results, language knowledge, scientific work, math test, foreign language)
Brief description	PhD. studies focuses primarily on the theory of crisis management, dealing with crisis events and clarification of their economic, social, psychological and other aspects. In addition, the department engages is public administration crisis management, risk theory and risk management. The Department of Crisis Management is the main department responsible for study programmes in the field of civil protection. These programmes are dealing with solutions of crisis situations form the managerial point of view. Subjects of a study programme are oriented towards the areas of public administration, economics, business and finance and also towards social and environmental backgrounds of crisis situations.
Does it include a Phd training programme for students?	Yes they attend Erasmus + training mobility in second year of their studies (at least for 2 months)
Content	The programme is oriented at the research of the theory and practice of crisis management, solving of crisis situations in different environment and at the explanation of their economic, social, psychological and other connections. Attention is paid to the questions of aims, content, competence and tasks of crisis management in public administration, theories of risks and risk management, the personality of crisis manager, communication in crisis situations and increase of effectiveness of the crisis management.
Learning outcomes	Theoretical knowledge: <ul style="list-style-type: none"> • Use of scientific methods in area of risk and crisis management, • Research about emergency situation occurrence (public, social and

	<p>business environment),</p> <ul style="list-style-type: none"> • Creates mathematic and statistic and econometric methods and techniques for crisis situation solving in specific environment occurring in state including international threats, • Can be involved within legislative acts creation with emphasis given on crisis management legislation, • Can manage documents and data creation within crisis management cycle phases. <p>Additional abilities:</p> <ul style="list-style-type: none"> • Get used to scientific work within using empirical and statistical methods, • Can use methodological approach of crisis management in all areas of social, technical, natural and economic environment.
Examination method	Public viva
Courses (topic area specific Phd courses, elective and recommended general courses, other courses)	<p>Subject to be chosen:</p> <ul style="list-style-type: none"> • Theory of Crisis management • Risk theory in Crisis Management • Probability and statistics • Managerial Theories • Economic crisis solving • Psychology in Crisis Management • Critical Infrastructure risk assessment
Teaching/Learning method	<p>PhD-courses (see above)</p> <p>Supervision (planned formal meetings (2/year)) and ad-hoc meetings when PhD-student requires it.</p> <p>Attendance at national and international conferences (writing abstracts, papers and presenting the work)</p> <p>Paper writing for publication in international scientific journals</p> <p>Placement at another international research institution (not formally required) mainly through Erasmus + internships</p>
Other comments	-

UNIVERSITY OF ŽILINA

RESCUE SERVICES

Title	Rescue Services
University/Department	University of Žilina, Faculty of Security Engineering, Department of Fire Engineering
Country	Slovak Republic
Specific Area	Fire Safety Engineering
Website	http://fbi.uniza.sk/en/
Since	2000
Ph.D. student status	Student with scholarship (full-time)/ Student without scholarship (distance)
Duration	3 year full time studies or 5 years part-time (distance) studies
Credits (courses, thesis, total)	180
Thesis type	Monograph
Is there option for intermediate title? (e.g. licentiate)	NO
Admission requirements	Graduating Of Fire Services study MSc programme or related study programme Admission exam (study results, language knowledge, scientific work, math test, foreign language)
Brief description	<p>The graduate of PhD. study programme supervises the scientific methods of research, development and solution of crisis situations arising from accidents, fires and extraordinary events under difficult conditions. He or she has a basic command of methods of occurrence, action and solution of emergencies in different environments, identification and solution of risk and crisis phenomena in these environments. The graduate knows crisis planning method and methods of implementation of the crisis plans by the rescue components of the integrated rescue system. He or she has a basic command of research methods, management methods and techniques of Integrated Rescue System. The graduate knows fundamental legal norms and acts in the field of emergency services. Based on the results of the research activity, he or she proposes new methods and technologies for rescue services and activities.</p> <p>PhD. students have compulsory and elective subjects and they need to get 180 credits within the 3 year duration of study.</p>
Does it include a Phd training programme for students?	Yes they attend Erasmus + training mobility in second year of their studies (at least for 2 months)
Content	Graduate of the Rescue Services (PhD.): - Scientifically investigates and creates methods of crisis management of the rescue components of the Integrated

	<p>Rescue System;</p> <ul style="list-style-type: none"> - investigates accidents and extraordinary events of natural, ecological, economic and infrastructure character, the occurrence of nuclear power plant accidents, oil accidents, the emergence of special situations in rail, road, pipeline and air transport and the occurrence of accidents due to possible terrorist acts; - produces mathematical-statistical and econometric methods and techniques for solving these crisis situations in the territory of the state, including supranational influences; - is involved in developing legislative standards with emphasis on crisis management legislation; - works in the creation of a documentation and data base and in the creation of specific information systems for management and automated planning of relevant issues - acquires the principles of scientific work and its application in the theory of risks; - learns to use mathematical-statistical methods and methods of operational analysis in scientific work; - will be able to methodologically address the management of the rescue components of the integrated rescue system in the event of accidents and extraordinary events of natural, ecological, economic and infrastructure, the occurrence of nuclear power plant accidents, oil accidents, emergencies in railway, road, Due to possible terrorist acts; - will use methodological procedures to address these crisis situations, to participate in the education of executives working in this field; - can scientifically formulate problems and solve technical and technological assignments; - acquires the ethical and social aspects of scientific work, - is able to present the results of his or her scientific and research activities. 																
Learning outcomes	Papers in magazines and proceedings, so called "minimum thesis", dissertation thesis, experimental results, exams, etc.																
Examination method	Private defence, committee defence																
Courses (topic area specific Phd courses, elective and recommended general courses, other courses)	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="4" style="text-align: center; padding: 5px;">1st year of study</td> </tr> <tr> <th style="width: 30%;">Subject</th> <th style="width: 20%;">Lectures/ Individual work (h.)</th> <th style="width: 20%;">Type</th> <th style="width: 30%;">Credits</th> </tr> <tr> <td>Management of Rescue Services</td> <td style="text-align: center;">52/175</td> <td style="text-align: center;">compulsory</td> <td style="text-align: center;">7</td> </tr> <tr> <td>System and operating</td> <td></td> <td style="text-align: center;">compulsory</td> <td style="text-align: center;">7</td> </tr> </table>	1 st year of study				Subject	Lectures/ Individual work (h.)	Type	Credits	Management of Rescue Services	52/175	compulsory	7	System and operating		compulsory	7
1 st year of study																	
Subject	Lectures/ Individual work (h.)	Type	Credits														
Management of Rescue Services	52/175	compulsory	7														
System and operating		compulsory	7														

	analysis	52/175		
	Dissertation project I.	0/275	compulsory	11
	Probability and statistics	26/125	elective	5
	Risk theory in crisis management	26/125	elective	5
	Informational and managing systems	26/125	elective	5
	Managerial theories	26/125	elective	5
	Theory of crisis management	26/125	elective	5
	Industrial accidents	26/125	elective	5
	Fire safety in technological procedures	26/125	elective	5
	Comprehensive care for rescue equipment	26/125	elective	5
	Technology of rescue works	26/125	elective	5
	Fire safety of buildings	26/125	elective	5
	Scientific and publication activities I.	0/500	elective	20

2nd year of study

Subject	Lectures/ Individual work (h.)	Type	Credits
Dissertation exam	0/500	compulsory	20
Dissertation project II.	0/375	compulsory	15
Foreign scientific – research training	90/125	compulsory	5
Scientific and publication activities II.	0/500	elective	20

3rd year of study

Subject	Lectures/ Individual work (h.)	Type	Credits
Drawing up and defence of dissertation thesis	0/750	compulsory	30
Dissertation project III.	0/125	compulsory	5
Scientific and publication activities III.	0/625	elective	25

Teaching/Learning method	PhD-courses (see above) Supervision (planned formal meetings (2/year)) and ad-hoc meetings when PhD-student requires it. Attendance at national and international conferences (writing abstracts, papers and presenting the work) Paper writing for publication in international scientific journals Placement at another international research institution (not formally required) mainly through Erasmus + internships
Other comments	