The Engineer develops the scientific knowledge, the related technologies and materials in order to design and build devices and plants able to fulfill the society needs.

MSc course in

ENGINEERING FOR
NATURAL RISK MANAGEMENT

Dipartimento di Ingegneria Navale, Elettrica, Elettronica e delle Telecomunicazioni (DITEN)
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Pubblicazione a cura della Commissione Orientamento e Tutorato
Tel. 010 3532148 2 gennaio 2017

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• General statistics on graduate students and career opportunities:
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WHAT YOU WILL DO ONCE GRADUATED

The M.Sc. in Engineering for Natural Risk Management aims to train professionals specialized in integrated risk management (forecasting, prevention, planning) designed to reduce the impacts of natural disasters on humans, on industrial activities, and on the environment. The M.Sc. graduate in Engineering for Natural Risk Management is capable of operating in all spheres of the safety and civil protection sectors at national and international level. The skills of the M.Sc. graduate in Engineering for Natural Risk Management include:

• observing and understanding the dynamics of complex environmental and social systems;
• predicting, identifying, analyzing, evaluating and communicating risk;
• drawing of emergency plans for the management of natural disasters or disasters caused by industrial accidents and their combination;
• developing and applying ICT models, methods and technologies in support of all phases of a civil protection process, even in combination with the skills listed above.

M.Sc. Graduates in Engineering for Natural Risk Management may find career opportunities in:

• public organizations and administrations;
• international organizations that deal with emergencies and disasters;
• international development cooperation;
• humanitarian organizations;
• private sector, insurances;
• professional services;
• research facilities;
• operational centers for forecasting natural disasters and decision support.

WHAT YOU WILL STUDY DURING THE M.SC. COURSE

The M.Sc. in Engineering for Natural Risk Management has the overall objective to form a professional figure able to propose integrated solutions for monitoring, prevention, minimization and assessment of the impacts of catastrophic natural events on the population, the territory and productive activities, both at local and global scale. The M.Sc. meets the target defined above through the teaching of the state-of-the-art scientific and technological knowledge in the areas of engineering dealing with the integrated risk management. In particular, the following topics are covered by the syllabus:

1. Understanding of the basic processes: engineering and geophysical disciplines applied to natural risk management
2. Knowledge of methods: modeling, monitoring and management of risk in its various manifestations (geological, geophysical, technological), organization of the civil protection systems (also from the regulatory point of view)
3. Mastery of the tools: observation of processes, planning, ICT technologies applied to monitoring and management of environmental and technological risk

The M.Sc. program specifically assigns a large number of credits (20) for internship and thesis, to be held in collaboration with national and international external entities. Students can choose between proposals more oriented to research and technological development or professional opportunities. Appropriate contacts with government agencies, research institutions and leading companies in the field of natural risk management are already established for this purpose.

WHAT OFFERS THE MSC IN ENGINEERING FOR NATURAL RISK MANAGEMENT TO ITS STUDENTS

The course is specifically designed to provide graduates with the following capabilities:

1. Understanding of some physical phenomena that generate disasters.
2. Understanding the mechanisms of interaction between natural events and industrial activities that can generate technological risks.
3. Ability to use the most advanced technologies in order to assess risk exposure and vulnerability, predict the occurrence of catastrophic events and post disasters impact assessment.
4. Definition of emergency plans for the integrated risk management and decisions support in emergency situations.
5. Ability to assess the legal implications related to the management of emergency situations.
6. Assessment of environmental impact of natural disasters.

ENTRY REQUIREMENTS

The admission to the M.Sc. in Engineering for Natural Risk Management is subject to the possession of specific curricular requirements and adequacy of personal preparation. An entrance exam is envisaged. Students who have received a Bachelor’s Degree with rank at least 9/10 of the highest score, or equivalent ECTS votes, are exempted.

The verification test will be carried out in the form of a public interview or written test and will be aimed at verifying the student’s general preparation with particular reference to the knowledge of fundamental notions, applications and professional aspects related to engineering issues.