

Università di Roma



# MASTER CBRNe

Chemical, Biological, Radiological, Nuclear and explosive  
Department of Industrial Engineering and School of Medicine and Surgery

A.Y. 2017-18 | Eighth Edition



## TIMELINE

*International Master Course in  
"Protection Against CBRNe Events"*

60 ECTS

**2<sup>nd</sup>**

**Level Course - ADVANCED**

---

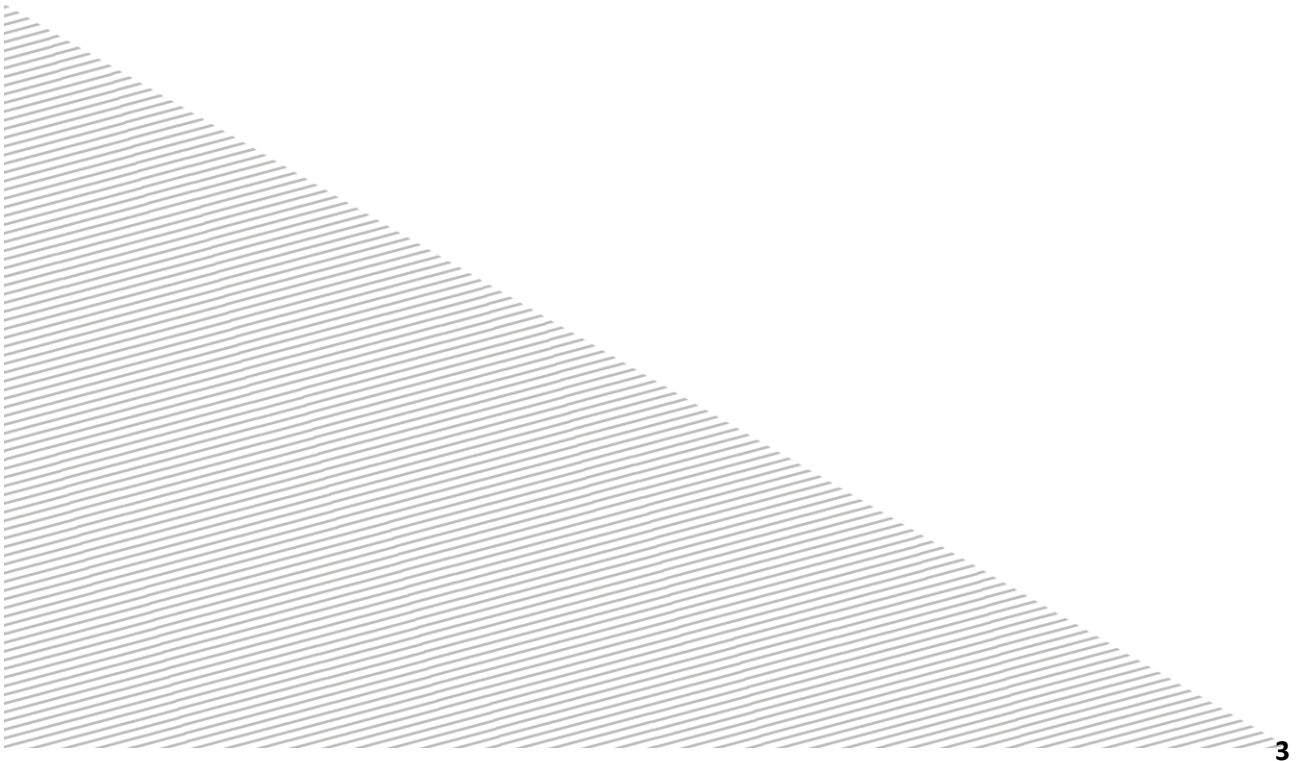
Official Course Language **ENGLISH**

# INDEX

---

|  |    |
|--|----|
| <b>COURSE DESCRIPTION - 2<sup>nd</sup> Level (ADVANCED) CBRNe Master</b> .....   | 4  |
| <b>PHASE 1 – MODULES</b> .....   | 6  |
| <b>Module 0A</b> - CBRNe harmonization, CBRNe Main bodies intro: OPCW, NATO, UNICRI and non-proliferation intro (optional) |    |
| 20-24 November 2017 (University of Rome Tor Vergata) .....   | 6  |
| <b>Module 0B</b> - CBRNe subject from an academic discipline, Technical reports, Thesis, research (optional)               |    |
| 27-30 November 2017 (University of Rome Tor Vergata) .....   | 7  |
| <b>Module 1</b> - Fundamentals of Crises, Emergencies, Disasters and CBRNe Events Management                               |    |
| 22-26 January 2018 (University of Rome Tor Vergata) .....  | 8  |
| <b>Module 2</b> - International Cooperation for Crises, Emergencies & Disasters Preparedness and Management                |    |
| 26 February-2 March 2018 (University of Rome Tor Vergata) .....  | 10 |
| <b>Module 3</b> - CBRNe events management  |    |
| 26-30 March 2018 (University of Rome Tor Vergata) .....  | 12 |
| <b>Module 4</b> - Management of Chemical releases scenarios  |    |
| 23-27 April 2018 (University of Rome Tor Vergata) .....  | 14 |
| <b>Module 6</b> - Management of Nuclear events and Radiological scenarios  |    |
| 19-23 June 2018 (University of Rome Tor Vergata) .....   | 16 |
| <b>Module 7</b> - Crisis and Emergency Risk Communication  |    |
| 23-27 July 2018 (University of Rome Tor Vergata) .....   | 18 |
| <b>Module 5</b> - Management of Outbreaks and Biological Releases Scenarios  |    |
| September or October 2018 (NATO SCHOOL-Oberammergau, Germany) .....  | 20 |
| <b>Module 8</b> - Investigation  |    |
| 5-9 November 2018 (University of Rome Tor Vergata) .....   | 22 |

|   |    |
|---|----|
| <b>PHASE 2 - Table Top Exercise (TTX); Internship and Thesis</b> .....                              | 24 |
| <b>Module 9 - Table Top Exercise for crises, emergencies, disasters and CBRNe events management</b> |    |
| December 2018 (University of Rome Tor Vergata) .....  | 24 |
| <b>INTERNSHIP</b>   |    |
| September-December 2018 .....   | 26 |
| <b>FINAL THESIS</b>   |    |
| 19 January 2019 (University of Rome Tor Vergata) .....  | 26 |
| <b>REMEDIAL SESSIONS</b>  |    |
| 23-27 July 2018   |    |
| 11-15 December 2018 .....   | 27 |



## COURSE DESCRIPTION

---

### 2<sup>nd</sup> Level (ADVANCED) CBRNe Master

The evolution of Safety and Security threats and their increase at an international level place remarkable focus on the improvement of emergency systems to deal with crises, including those connected to ordinary and non-conventional events (Chemical, Biological, Radiological, Nuclear, and explosive).

In every industrial country there are multiple entities with specialized teams in very specific fields, but the complexity of the events requires professionals that not only have specific CBRNe know-how, but also expertise in relevant areas.

Given the global interest in these issues, the Department of Industrial Engineering and the Faculty of Medicine and Surgery of the University of Rome Tor Vergata organize the international Master Courses in "Protection against CBRNe events": 1<sup>st</sup> Level Master Course in "Protection against CBRNe events" (120 ECTS) and 2<sup>nd</sup> Level Master Course in "Protection against CBRNe events" (60 ECTS). These courses aim at providing attendees with comprehensive competences in the field of CBRNe Safety and Security, through teaching and training focused on real needs.

Both Master Courses are designed according to the spirit of the Bologna Process for Higher Education, the Italian law and educational system.

- The Master Courses are organized also in cooperation with: [LINK](#).
- The Master Courses are sponsored by: [LINK](#).
- The training centers cooperating with the Master Courses are: [LINK](#).

**The 2<sup>nd</sup> level Master Course has officially granted the "NATO selected" status**

**The 2<sup>nd</sup> level Master Course has been included in the NATO Education and Training Opportunities Catalogue (ETOC)**

**The 2<sup>nd</sup> level Master Course is officially supported by OPCW through a Cooperation agreement**

**The 2<sup>nd</sup> level Master Course is officially part of the CEPOL Training Network**

- **The Master Course Directive Board is composed by: [LINK.](#)**
- **The Master Course Didactic Board is composed by: [LINK.](#)**
- **The Master Course Scientific Board is composed by: [LINK.](#)**

The 2<sup>nd</sup> Level Master Course aims at providing participants with appropriate technical, cognitive and operational skills in order to educate and train key figures in the field of CBRNe risk. In order to participate to the Master Course and obtain the official title, candidates must have a 300-ECTS Master degree or equivalent. "Equivalence" of degrees such as Military, Police, Fire-fighter Academy degrees etc., will be assessed on a case-by-case basis by the University competent bodies and the Master Course Steering Committee.

This Course aims at training professional "CBRNe Advisors of Decision Makers". At the end of the Course, attendees will obtain a "2nd Level Master Course in Protection Against CBRNe Events (60 ECTS)" degree.

The most important private companies operating in the CBRNe safety and security field support the Master Courses with their expertise, are involved in the didactic activities thanks to their experts and host the students for the period of the internship.

Among our lecturers, there are also subject matter experts from the University of Rome Tor Vergata and from all the institutions that are officially involved in the Master Courses activities.

Classroom lessons are complemented with: laboratory activities, case studies to be dealt with in working groups, visits, internships at collaborating international entities, and the preparation of the master's theses (the best ones will be selected for publication in scientific journals).

**You can visit the website of the Master  
([www.mastercbrn.com](http://www.mastercbrn.com))  
to see all the initiative connected to our courses.**

## PHASE 1 - MODULES

### MODULE 0A

**CBRNe harmonization, CBRNe Main bodies intro:  
OPCW, NATO, UNICRI and non-proliferation intro (optional)**

*20-24 November 2017 (University of Rome Tor Vergata)*

The aim of the module is to provide a harmonization about the fundamental concepts on CBRNe.

#### MODULE 0A - LEARNING OBJECTIVES AND MAIN TEACHING POINTS

| <b>L H 0A – CBRNe harmonization</b>  |                  |                          |
|--|------------------|--------------------------|
| By the end of the module, the students should be able to have a proper knowledge about the CBRNe meaning (from a civil and military point of view), they will learn the basic concepts about protection and prevention and they will know about the main international bodies operating in the sector. |                  |                          |
| Teaching Point   | Method and Time  | References and Notes     |
| ○ CBRNe concepts   | Individual Study | E-learning platform Docs |
| ○ CBRNe: military and civil perspectives   | Individual Study | E-learning platform Docs |
| ○ CBRNe main Bodies  | Individual Study | E-learning platform Docs |
| ○ Non proliferation concepts   | Individual Study | E-learning platform Docs |

## MODULE 0B

### CBRNe subject from an academic discipline, Technical reports, Thesis, research (optional)

27-30 November 2017 (University of Rome Tor Vergata)

The aim of the module is to provide a to teach to the candidates the CBRNe glossary and harmonize the level of English. The students will be introduced also to the CBRNe academic concepts and they will learn how to write a tech report, a thesis and how to do bibliographic research.

#### MODULE 0B - LEARNING OBJECTIVES AND MAIN TEACHING POINTS

| LH 0B – CBRNe : the academic point of view  |                      |                          |
|---|----------------------|--------------------------|
| By the end of the module, the students should be able to have an introduction on how use the CBRNe tech terms and how to prepare tech reports and write the final thesis. |                      |                          |
| Teaching Point  | Method               | References and Notes     |
| ○ CBRNe Glossary  | Individual Study     | E-learning platform Docs |
| ○ English harmonization   | Classroom activities | E-learning platform Docs |
| ○ Tech reports preparation  | Classroom activities | E-learning platform Docs |
| ○ Thesis preparation  | Classroom activities | E-learning platform Docs |

# MODULE 1

## Fundamentals of Crises, Emergencies, Disasters and CBRNe Events Management

22-26 January 2018 (University of Rome Tor Vergata)

The aim of the module is to provide the student with basic concepts for the management of crises, emergencies, disasters and CBRNe events.

This individual study of documents facilitates the development of schemes and mental models that the students use to organize and simplify their knowledge and classify concepts and notions. These conceptual structures help students to fill in the gaps to get a comprehensive and well-organized educational background and a common level of knowledge on these specific aspects to attend further modules of the curriculum.

### MODULE 1 - LEARNING OBJECTIVES AND MAIN TEACHING POINTS

| LO 1 – INTERNATIONAL COOPERATION FOR EMERGENCIES AND DISASTERS PREPAREDNESS AND MANAGEMENT - FUNDAMENTALS  |                  |                          |
|--|------------------|--------------------------|
| By the end of the module, the students should be able to describe in broad terms main international organizations involved in the management of possible emergencies and disasters and their roles and responsibilities. |                  |                          |
| Teaching Point   | Method           | References and Notes     |
| o Civil and military management of crisis and emergencies  | Individual Study | E-learning platform Docs |
| o International Organizations in emergencies and disasters preparedness and management   | Individual Study | E-learning platform Docs |
| o International cooperation for emergencies and disasters management   | Individual Study | E-learning platform Docs |



| <b>LO 2 – CBRNe EVENTS MANAGEMENT - FUNDAMENTALS</b>  |                  |                             |
|---|------------------|-----------------------------|
| <b>By the end of the module, the students should be able to illustrate the main characteristics and effects of CBR agents release and principles to take into consideration for the management of CBRNe events.</b> |                  |                             |
| <b>Teaching Point</b>   | <b>Method</b>    | <b>References and Notes</b> |
| 1.1 CBRNe defence fundamentals, threats, and hazards  | Individual Study | E-learning platform Docs    |
| 1.2 Policy and international cooperation  | Individual Study | E-learning platform Docs    |
| 1.3 CBR agents and unconventional weapons overview  | Individual Study | E-learning platform Docs    |
| 1.4 Principles of CBRNe events management   | Individual Study | E-learning platform Docs    |

| <b>LO 3 – EMERGENCY RISK COMMUNICATION - FUNDAMENTALS</b>  |                      |                             |
|--|----------------------|-----------------------------|
| <b>By the end of the module, the students should be able to describe in broad terms main principles of emergency risk communication and explain main aspects to take into consideration for the development of an effective communication plan in case of emergencies.</b> |                      |                             |
| <b>Teaching Point</b>  | <b>Method</b>        | <b>References and Notes</b> |
| o Principles of the Communication and Mass Media   | Interactive lectures | E-learning platform Docs    |
| o Emergency Communication and populace awareness   | Interactive lectures | E-learning platform Docs    |
| o Emergency Communication Techniques and Procedures overview   | Interactive lectures | E-learning platform Docs    |

## MODULE 2

---

### International Cooperation for Crises, Emergencies & Disasters Preparedness and Management

*26 February-2 March 2018 (University of Rome Tor Vergata)*

The aim of the module is to provide the student with all aspects of the emergencies and disasters preparedness planning and management in the context of international cooperation activities and initiatives.

#### MODULE 2 - LEARNING OBJECTIVES AND MAIN TEACHING POINTS

| <b>LO 4 – CIVIL AND MILITARY MANAGEMENT OF CRISES, EMERGENCIES AND DISASTERS</b>  |                      |  |
|---|----------------------|--|
| <b>By the end of the module, the students should be able to explain the Civil and Military emergency preparedness planning process, consequences management, main differences and cooperation activities.</b> |                      |  |
| Teaching Point  | Method               | References and Notes                       |
| 1.5 Civil emergencies preparedness and consequences management  | Interactive lectures | Instructor's notes                         |
| 1.6 Military emergency preparedness and consequences management   | Interactive lectures | NATO Strategic Concept<br>EADRCC documents |
| 1.7 Comprehensive approach and Civil-Military Cooperation   | Interactive lectures | Instructor's notes                         |

| <b>LO 5 – ROLES AND RESPONSIBILITIES OF INTERNATIONAL ORGANIZATIONS IN CRISES, EMERGENCIES AND DISASTERS PREPAREDNESS AND MANAGEMENT</b>   |                             |                                |
|--|-----------------------------|--------------------------------|
| <b>By the end of the module, the students should be able to illustrate the Organizations involved in the management of emergencies, their role and responsibilities, the cooperation initiatives and projects.</b> |                             |                                |
| <b>Teaching Point</b>  | <b>Method</b>               | <b>References and Notes</b>    |
| o <i>International Law and Human Rights</i>  | <i>Interactive lectures</i> | <i>OHCHR documents</i>         |
| o <i>History of IOs and overview of the International framework</i>  | <i>Interactive lectures</i> | <i>Instructor's notes</i>      |
| o <i>UN-OCHA role and responsibilities</i>   | <i>Interactive lectures</i> | <i>UN-OCHA documents</i>       |
| o <i>WHO role and responsibilities</i>   | <i>Interactive lectures</i> | <i>Instructor's notes</i>      |
| o <i>EU-ERCC role and responsibilities</i>   | <i>Interactive lectures</i> | <i>EU Decision n.1313/2013</i> |
| o <i>OSCE role and responsibilities</i>  | <i>Interactive lectures</i> | <i>OSCE Decision No. 3/11</i>  |
| o <i>NATO role and responsibilities</i>  | <i>Interactive lectures</i> | <i>EADRCC documents</i>        |
| o <i>GOs, NGOs and other organizations</i>   | <i>Interactive lectures</i> | <i>Instructor's Notes</i>      |
| o <i>Cooperation initiatives and projects</i>  | <i>Interactive lectures</i> | <i>Instructor's Notes</i>      |

| <b>LO 6 – GENERAL ASPECTS AND CHALLENGES DURING EMERGENCIES</b>   |                             |                             |
|---|-----------------------------|-----------------------------|
| <b>By the end of the module, the students should be able to explain the main aspects that have to be taken into account in the management of emergencies, introducing the basic principle on Incident Command. Who is doing what, and how many caps can one person have. Working in a multi jurisdictional field how to handle work and communicate</b> |                             |                             |
| <b>Teaching Point</b>   | <b>Method</b>               | <b>References and Notes</b> |
| o <i>Operations management &amp; coordination</i>   | <i>Interactive lectures</i> | <i>Instructor's notes</i>   |
| o <i>Medical response to mass casualties</i>  | <i>Interactive lectures</i> | <i>Instructor's notes</i>   |
| o <i>Logistics aspects</i>  | <i>Interactive lectures</i> | <i>Instructor's notes</i>   |
| o <i>Psychological effects on the populace</i>  | <i>Interactive lectures</i> | <i>Instructor's notes</i>   |
| o <i>Legal aspects</i>  | <i>Interactive lectures</i> | <i>Instructor's notes</i>   |
| o <i>Current ops, LLs &amp; Case Studies</i>  | <i>Interactive lectures</i> | <i>Instructor's notes</i>   |

## MODULE 3

### CBRNe Events Management

26-30 March 2018 (University of Rome Tor Vergata)

The aim of the module is to provide the students with main and common aspects of CBRNe events preparedness and management in the context of international cooperation activities and initiatives.

The specific aspects of CBRNe scenarios are the focus of modules 4 (CHEM), 5 (BIO) and 6 (RAD-NUC).

#### MODULE 3 - LEARNING OBJECTIVES AND MAIN TEACHING POINTS

| LO 7 – GENERAL ASPECTS OF CBRNe DEFENCE   |                      |                      |  |
|---|----------------------|----------------------|--|
| By the end of the module, the students should be able to explain the main principles and aspects of CBRNe risks, hazards and threats, CBR agents characteristics and possible main effects. |                      |                      |  |
| Teaching Point  | Method               | References and Notes |  |
| o Overview of CBRNe risks and threats   | Interactive lectures | Instructor's notes   |  |
| o CBRN Terrorism a basic Terrorism awareness class should be taught (political violence and radicalistaion leading to terrorism).   | Interactive lectures | Instructor's notes   |  |
| o CBRNe terrorism   | Interactive lectures | Instructor's notes   |  |
| o CBRNe Intelligence  | Interactive lectures | INTERPOL Docs        |  |
| o CBRNe forensics and law enforcement   | Interactive lectures | Instructor's notes   |  |
| o CBRNe principles and response measures  |                      |                      |  |

| <b>LO 8 – MAIN ASPECTS FOR CBRNe AGENTS MANAGEMENT</b>   |   |  |
|--|---|--|
| <b>By the end of the module, the students should be able to describe and explain general aspects, techniques and procedures in the management of agents.</b> |   |  |
| <b>Teaching Point</b>  | <b>Method</b>                                       | <b>References and Notes</b>                            |
| 1.8 <i>Detection, identification and monitoring techniques overview</i>  | <i>Interactive lectures</i>                         | <i>Instructor's notes</i>                              |
| 1.9 <i>CBRNe warning and reporting during CBRNe events</i>   | <i>Interactive lecture with practical exercises</i> | <i>Standard emergency WR procedures &amp; software</i> |
| 1.10 <i>Individual and collective CBRNe protection and dress levels</i>  | <i>Interactive lectures</i>                         | <i>Instructor's notes</i>                              |
| 1.11 <i>CBRNe hazard management overview</i>   | <i>Interactive lectures</i>                         | <i>Instructor's notes</i>                              |
| 1.12 <i>Individual, collective and material CBRNe decontamination techniques</i>   | <i>Interactive lectures</i>                         | <i>Instructor's notes</i>                              |
| 1.13 <i>Medical aspects in CBRNe scenarios</i>   | <i>Interactive lectures</i>                         | <i>Instructor's notes</i>                              |

| <b>LO 9 – CBRNE POLICY AND INTERNATIONAL COOPERATION</b>  |                             |  |
|---|-----------------------------|--|
| <b>By the end of the module, the students should be able to illustrate the international policy, main references, Civil-Military CBRNe preparedness &amp; consequence management, cooperation initiatives and projects.</b> |                             |  |
| <b>Teaching Point</b>   | <b>Method and Time</b>      | <b>References and Notes</b>  |
| o <i>International CBRNe policy</i>   | <i>Interactive lectures</i> | <i>UNSCR 1540 and following references, EU-NATO docs</i>   |
| o <i>International non-proliferation initiatives and conventions</i>  | <i>Interactive lectures</i> | <i>EU CBRN action plan<br/>NATO's strategic policy &amp; comprehensive approach</i>                    |
| o <i>Civil-Military CBRNe events preparedness and consequences management</i>   | <i>Interactive lectures</i> | <i>EU CBRN CoEs initiative</i>   |
| o <i>International CBRNe cooperation initiatives and projects</i>   | <i>Interactive lectures</i> | <i>Principles of the Law of Armed Conflicts (LOAC)<br/>Geneva Protocol 1925<br/>BWC 1972/ CWC 1993</i> |

## MODULE 4

---

### Management of Chemical Releases Scenarios

23-27 April 2018 (University of Rome Tor Vergata)

The aim of the module is to provide the students with a comprehensive overview of current and emerging chemical hazard, risks and threats within the context of international policies response measures and capabilities to face possible releases of chemical agents.

#### MODULE 4 - LEARNING OBJECTIVES AND MAIN TEACHING POINTS

| LO 10 – CHEMICAL AGENTS FUNDAMENTALS   |                      |                      |
|--|----------------------|----------------------|
| By the end of the module, the students should be able to explain chemical agents, their classification, characteristics and effects. |                      |                      |
| Teaching Point   | Method               | References and Notes |
| o The history of chemical weapons  | Interactive lectures | Instructor's notes   |
| o Classification and characteristics of agents, CWA, TIC and dual-use  | Interactive lectures | Instructor's notes   |
| o Chemical agents effects on health  | Interactive lectures | Instructor's notes   |

| <b>LO 11 – INTERNATIONAL POLICY, CHEMICAL SAFETY AND SECURITY</b>   |                      |  |
|---|----------------------|--|
| <b>By the end of the module, the students should be able to describe the risks, hazards, threats of chemical agents, the CHEM safety and security within the context of international policy and main initiatives</b> |                      |  |
| <b>Teaching Point</b>   | <b>Method</b>        | <b>References and Notes</b>                |
| 1.14 Chemical risks, hazards and threats  | Interactive lectures | Instructor's notes                         |
| 1.15 Basic Terrorism awareness, Chemical terrorism  | Interactive lectures | Instructor's notes                         |
| 1.16 Overview of international policy, principles and main organizations  | Interactive lectures | Instructor's notes                         |
| 1.17 CW treaties, non-proliferation initiatives, transnational course of actions for illicit trafficking & CWA disablement  | Interactive lectures | Instructors from OPCW, UNICRI and INTERPOL |
| 1.18 Chemical threats and preparedness  | Interactive lectures | Instructor's notes                         |
| 1.19 Security measures and cyber defence of critical infrastructures and laboratories   | Interactive lectures | Instructor's notes                         |
| 1.20 Safety measures and procedures   | Interactive lectures | Instructor's notes                         |
| 1.21 Legal considerations on chemical agents  | Interactive lectures | Geneva Convention/ CWC                     |
| <b>LO 12 – MANAGEMENT OF CHEMICAL RELEASES SCENARIOS</b>  |                      |  |
| <b>By the end of the module, the students should be able to illustrate the capabilities and procedures to defeat, mitigate and manage chemical agents threats and possible releases.</b>                              |                      |  |
| <b>Teaching Point</b>   | <b>Method</b>        | <b>References and Notes</b>                |
| o Chemical detection & identification and developments in CHEM technology   | Interactive lectures | Instructor's notes                         |
| o Warning & reporting in case of release  | Interactive lectures | Instructor's notes                         |
| o Chemical sampling and analysis  | Interactive lectures | WR procedures & software                   |
| o Physical protection   | Interactive lectures | Instructor's notes                         |
| o Hazard management & decontamination   | Interactive lectures | Instructor's notes                         |
| o Prophylaxis and treatments of victims   | Interactive lectures | Instructor's notes                         |
| o Management of releases & casualties   | Interactive lectures | Instructor's notes                         |
| o Case studies and lessons learned  | Interactive lectures | Instructor's notes                         |

## MODULE 6

---

### Management of Nuclear Events and Radiological Scenarios

*19-23 June 2018 (University of Rome Tor Vergata)*

The aim of the module is to provide the students with a comprehensive overview of current and emerging nuclear and radiological hazard, risks and threats within the context of international policies, response measures and capabilities to face possible nuclear events and radiological scenarios.

#### MODULE 6 - LEARNING OBJECTIVES AND MAIN TEACHING POINTS

| <b>LO 16 – RADIATIONS, NUCLEAR WEAPONS AND NUCLEAR POWER FUNDAMENTALS</b>   |                             |                             |
|---|-----------------------------|-----------------------------|
| <b>By the end of the module, the students should be able to explain the radiological sources classification, characteristics and effects and describe the historical developments in nuclear energy technologies.</b> |                             |                             |
| <i>Teaching Point</i>   | <i>Method</i>               | <i>References and Notes</i> |
| o <i>History of radiations discoveries, nuclear weapons and nuclear power technologies</i>  | <i>Interactive lectures</i> | <i>Instructor's notes</i>   |
| o <i>Classification and characteristics of radiological sources, TIR and dual-use</i>   | <i>Interactive lectures</i> | <i>Instructor's notes</i>   |
| o <i>Effects of radiations on health</i>  | <i>Interactive lectures</i> | <i>Instructor's notes</i>   |



| <b>LO 17 – INTERNATIONAL POLICY, NUCLEAR SAFETY AND SECURITY</b>  |                      |                             |
|---|----------------------|-----------------------------|
| <b>By the end of the module, the students should be able to describe the risks, hazards, threats of radiations and nuclear weapons, safety and security of critical infrastructures and international policy and initiatives.</b> |                      |                             |
| <b>Teaching Point</b>   | <b>Method</b>        | <b>References and Notes</b> |
| 1.22 Radiological risks, hazards and threats  | Interactive lectures | Instructor's notes          |
| 1.23 Basic Terrorism awareness, Nuclear terrorism and radiological dispersal devices  | Interactive lectures | Instructor's notes          |
| 1.24 Overview of international policy, principles and main organizations  | Interactive lectures | Instructor's notes          |
| 1.25 Nuclear treaties, non-proliferation initiatives and COAs for illicit trafficking   | Interactive lectures | Instructor's notes          |
| 1.26 Threats and preparedness   | Interactive lectures | Instructor's notes          |
| 1.27 Security measures and cyber defence of critical infrastructures and laboratories   | Interactive lectures | Instructor's notes          |
| 1.28 Safety measures and procedures   | Interactive lecture  | Instructor's notes          |
| 1.29 Legal Considerations   | Interactive lectures | Instructor's notes          |
| <b>LO 18 – MANAGEMENT OF NUCLEAR EVENTS AND RADIOLOGICAL SCENARIOS</b>  |                      |                             |
| <b>By the end of the module, the students should be able to illustrate the capabilities and procedures to defeat, mitigate and manage radiological threats and possible scenarios.</b>  |                      |                             |
| <b>Teaching Point</b>   | <b>Method</b>        | <b>References and Notes</b> |
| o Radiological detection & identification   | Interactive lectures | Instructor's notes          |
| o Warning and reporting of events   | Interactive lectures | Instructor's notes          |
| o Physical protection   | Interactive lectures | WR procedures & software    |
| o Hazard management, exposures records and decontamination  | Interactive lectures | Instructor's notes          |
| o Prophylaxis & treatments after exposure   | Interactive lectures | Instructor's notes          |
| o Management of Nuclear/Rad events  | Interactive lectures | Instructor's notes          |
| o Case studies from real events   | Interactive lectures | Instructor's notes          |

## MODULE 7

### Crisis and Emergency Risk Communication

23-27 July 2018 (University of Rome Tor Vergata)

The aim of the module is to highlight and emphasize main aspects on communication and information management providing the students with basic concepts and procedures to be taken into consideration and applied during emergencies and CBRNe events.

#### MODULE 7 - LEARNING OBJECTIVES AND MAIN TEACHING POINTS

| LO 19 – PRINCIPLES OF COMMUNICATION AND MASS MEDIA   |                      |                      |  |
|--|----------------------|----------------------|--|
| By the end of the module, the students should be able to explain the principles and concepts about the communication and information management and sharing. |                      |                      |  |
| Teaching Point   | Method               | References and Notes |  |
| o Principles of communication  | Interactive lectures | Instructor's notes   |  |
| o Communication effectiveness  | Interactive lectures | Instructor's notes   |  |
| o Internal and external communication  | Interactive lectures | Instructor's notes   |  |
| o Mass Media, new Media and public perceptions   | Team work            | Instructor's notes   |  |
| o Table top exercises building on IC international framework and LO 19. Will take all the taught principles of L019 and IC into considerations               |                      |                      |  |

| <b>LO 20 – EMERGENCY COMMUNICATION AND POPULACE AWARENESS</b>   |                             |  |
|---|-----------------------------|--|
| <b>By the end of the module, the students should be able to describe main principles and techniques for an effective communication activity and planning for emergencies and CBRNe events management.</b> |                             |  |
| <b>Teaching Point</b>   | <b>Method</b>               | <b>References and Notes</b>  |
| 1.30 <i>Communication with the public: challenges during emergencies and population awareness</i>   | <i>Interactive lectures</i> | <i>Instructor's notes</i>  |
| 1.31 <i>Information management and sharing</i>  | <i>Interactive lectures</i> | <i>Instructor's notes</i>  |
| 1.32 <i>Emergency communications in disasters</i>   | <i>Interactive lectures</i> | <i>UN emergency comms.</i>   |
| 1.33 <i>Planning of communication strategies to face unexpected situations</i>  | <i>Interactive lectures</i> | <i>Instructor's notes</i>  |
| 1.34 <i>Communicating in the first hours: pre-events standard messages and materials</i>  | <i>Interactive lectures</i> | <i>Pre-defined Messages/ reports/ radio/ script/ websites/ podcasts and public announcements</i> |
| 1.35 <i>EU international initiatives &amp; cooperation</i>  | <i>Interactive lectures</i> | <i>EU CBRN action plan</i>   |
| 1.36 <i>Case studies &amp; best practices</i>   | <i>Interactive lectures</i> | <i>Instructor's Notes</i>  |

| <b>LO 21 – PRACTICAL APPLICATION OF EMERGENCY COMMUNICATION TECHNIQUES AND PROCEDURES</b>   |  |  |
|---|--|--|
| <b>By the end of the module, the students should be able to apply techniques and procedures, develop an effective communication, work with media and use standard key-messages and materials before, during and after an emergency.</b> |  |  |
| <b>Teaching Point</b>   | <b>Method</b>  | <b>References and Notes</b>  |
| o <i>Introduction to the scenario</i>   | <i>Interactive lectures</i>                            | <i>Exercise reference docs</i>   |
| o <i>Roles, responsibility and procedures</i>   | <i>Interactive lectures</i>                            | <i>Exercise reference docs</i>   |
| o <i>Situation &amp; communication Plan Analysis</i>  | <i>Collective Study</i>                                | <i>Exercise reference docs</i>   |
| o <i>Communication in different scenarios</i>   | <i>Practical exercises (Syndicates max 5 st. each)</i> | <i>Scenarios: earthquakes, landslides, mudslides, floods, CBRNe events (...)</i> |
| o <i>Hot wash up, final comments and closing</i>  | <i>Open discussions</i>                                | <i>Instructor's notes</i>  |

## MODULE 5

---

### Management of Outbreaks and Biological Releases Scenarios

September or October 2018 (NATO SCHOOL - Oberammergau, Germany)

The aim of the module is to provide the students with a comprehensive overview of current and emerging biological hazard, risks and threats within the context of international policy, biological response measures and capabilities to face possible biological releases and outbreaks.

#### MODULE 5 - LEARNING OBJECTIVES AND MAIN TEACHING POINTS

| LO 13 – BIOLOGICAL AGENTS FUNDAMENTALS   |                             |                           |
|--|-----------------------------|---------------------------|
| By the end of the module, the students should be able to explain biological agents, their classification, characteristics and effects. |                             |                           |
| Teaching Point   | Method                      | References and Notes      |
| o <i>The history of biological weapons</i>   | <i>Interactive lectures</i> | <i>Instructor's notes</i> |
| o <i>Classification and characteristics of agents, BWA, TIB and dual-use</i>   | <i>Interactive lectures</i> | <i>Instructor's notes</i> |
| o <i>Biological agents effects on health</i>   | <i>Interactive lectures</i> | <i>Instructor's notes</i> |

| <b>LO 14 – INTERNATIONAL POLICY, BIOLOGICAL SAFETY AND SECURITY</b>  |                      |                             |
|--|----------------------|-----------------------------|
| <b>By the end of the module, the students should be able to describe the risks, hazards, threats of biological agents, the BIO safety and security within the context of international policy and main initiatives</b> |                      |                             |
| <b>Teaching Point</b>  | <b>Method</b>        | <b>References and Notes</b> |
| 1.37 Biological risks, hazards and threats   | Interactive lectures | Instructor's notes          |
| 1.38 Basic Terrorism awareness, BIO terrorism  | Interactive lectures | Instructor's notes          |
| 1.39 Overview of international policy, principles and main organizations   | Interactive lectures | Instructor's notes          |
| 1.40 BW treaties, non-proliferation initiatives & transnational COAs for illicit trafficking   | Interactive lectures | Instructor's notes          |
| 1.41 Biological threats and preparedness   | Interactive lectures | Instructor's notes          |
| 1.42 Security measures and cyber defence of critical infrastructures and laboratories  | Interactive lectures | Instructor's notes          |
| 1.43 Safety measures and procedures  | Interactive lectures | Instructor's notes          |
| 1.44 Legal considerations on biological agents   | Interactive lectures | Geneva Convention/ BWC      |

| <b>LO 15 – MANAGEMENT OF OUTBREAKS AND BIOLOGICAL RELEASES SCENARIOS</b>  |                      |                             |
|---|----------------------|-----------------------------|
| <b>By the end of the module, the students should be able to illustrate the capabilities and procedures to defeat, mitigate and manage biological agents threat and possible releases.</b> |                      |                             |
| <b>Teaching Point</b>   | <b>Method</b>        | <b>References and Notes</b> |
| o Biological detection & identification and developments in BIO technology  | Interactive lectures | Instructor's notes          |
| o Warning & reporting for outbreaks   | Interactive lectures | Instructor's notes          |
| o Biological sampling and analysis  | Interactive lectures | WR procedures & software    |
| o Physical protection   | Interactive lectures | Instructor's notes          |
| o Hazard management & decontamination   | Interactive lectures | Instructor's notes          |
| o Prophylaxis and treatments of victims   | Interactive lectures | Instructor's notes          |
| o Management of outbreaks & victims   | Interactive lectures | Instructor's notes          |
| o Case studies and lessons learned  | Interactive lectures | Instructor's notes          |

## MODULE 8

### Investigation

5-9 November 2018 (University of Rome Tor Vergata)

The aim of the module is to highlight and emphasize main aspects on investigation techniques management providing the student with basic concepts and procedures to be taken into consideration and applied during emergencies and CBRNe events.

#### MODULE 8 - LEARNING OBJECTIVES AND MAIN TEACHING POINTS

| LO 22 – PRINCIPLES OF THE INVESTIGATION   |                      |                      |
|---|----------------------|----------------------|
| By the end of the module, the students should be able to explain the principles and concepts about the investigations |                      |                      |
| Teaching Point  | Method               | References and Notes |
| o Principles of investigation   | Interactive lectures | Instructor's notes   |
| o Investigation effectiveness   | Interactive lectures | Instructor's notes   |
| o Crime scene or CBRNe scene  | Interactive lectures | Instructor's notes   |
| o Investigation activities on CBRNe scene   | Lab. activities      | Instructor's notes   |

| <b>LO 23 – EMERGENCY COMMUNICATION AND POPULACE AWARENESS</b>   |   |   |
|---|---|---|
| <b>By the end of the module, the students should be able to describe main principles and techniques for an effective communication activity and planning for emergencies and CBRNe events management.</b> |   |   |
| <b>Teaching Point</b>   | <b>Method</b>                                   | <b>References and Notes</b>   |
| 1.45 Investigation: challenges during emergencies and population awareness  | Interactive lectures                            | Instructor's notes  |
| 1.46 Emergency communications in disasters  | Interactive lectures                            | Instructor's notes  |
| 1.47 Planning of investigation strategies to face unexpected situations   | Interactive lectures                            | Instructor's notes  |
| 1.48 How to avoid Hot Spot contamination  | Interactive lectures                            | UN emergency comms.   |
| 1.49 EU international initiatives & cooperation   | Interactive lectures                            | Instructor's notes  |
| 1.50 Case studies & best practices, TTX   | Interactive lectures                            | Pre-defined Messages/ reports/ radio/ script/ websites/ podcasts and public announcements<br>EU CBRNe action plan |
| <b>LO 24 – PRACTICAL APPLICATION OF INVESTIGATION TECHNIQUES AND PROCEDURES</b>   |   |   |
| <b>By the end of the module, the students should be able to apply techniques and procedures, develop an effective investigation</b>   |   |   |
| <b>Teaching Point</b>   | <b>Method</b>                                   | <b>References and Notes</b>   |
| o Introduction to the scenario  | Interactive lectures                            | Exercise reference docs   |
| o Roles, responsibility and procedures  | Interactive lectures                            | Exercise reference docs   |
| o Situation & communication Plan Analysis   | Collective Study                                | Exercise reference docs   |
| o Investigation in different scenarios  | Practical exercises (Syndicates max 5 st. each) | Scenarios: city, critical infrastructure  |
| o Hot wash up, final comments and closing   | Open discussions                                | Instructor's notes  |

## PHASE 2 - Table Top Exercise (TTX); Internship and Thesis

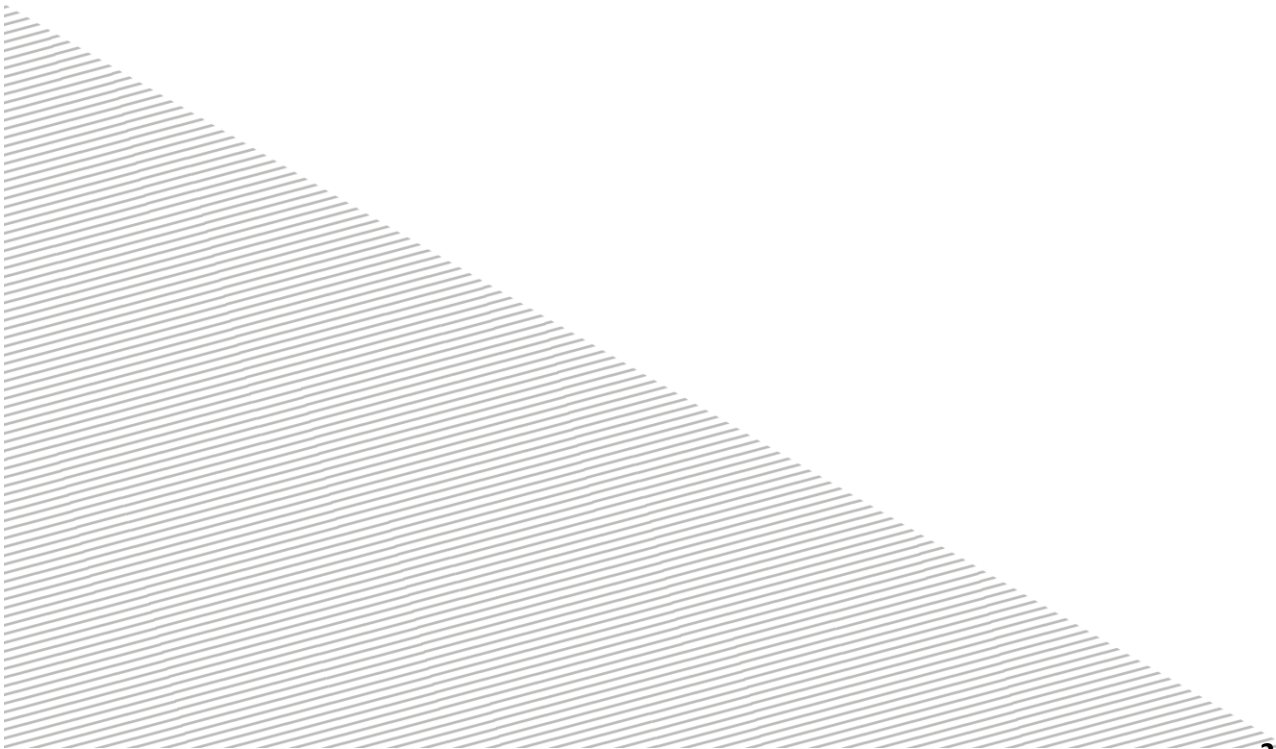
### MODULE 9

---

#### Table Top Exercise for Crises, Emergencies, Disasters and CBRNe Events Management

*December 2018 (University of Rome Tor Vergata)*

The aim of the Table Top Exercise (TTX) is to provide the students with different scenarios in order to put notions learned during previous modules into practice, and apply techniques and procedures for the management of specific aspects and consequences of crises, emergencies, disasters and CBRNe events, in the context of international policies and main references.





| <b>(MODULEs 1-2-3-4-5-6-7-8)</b>  |   |  |
|---|---|--|
| <b>CRISES, EMERGENCIES, DISASTERS AND CBRNe EVENTS MANAGEMENT</b>   |   |  |
| <b>By the end of the curriculum, in reference to the notions acquired, the students should be able to manage emergency situations effectively providing advice to decision makers and finding solutions to specific aspects, possible effects and consequences in the context of international policy and procedures.</b> |   |  |
| <b>Teaching Point</b>   | <b>Method</b>                           | <b>References and Notes</b>                            |
| <i>Introduction to the situation</i>  | <i>Interactive lectures</i>             | <i>Facilitators' notes, SITMAN, reference docs</i>     |
| <ul style="list-style-type: none"> <li>• <i>Landslide and mudslide management</i></li> </ul>  | <i>Analysis of Exercise Scenario 01</i> | <i>Facilitators' notes, SITMAN, reference docs</i>     |
| <ul style="list-style-type: none"> <li>• <i>Flood management</i></li> </ul>   | <i>Exercise – Scenario 02</i>           | <i>Facilitators' notes, SITMAN, reference docs</i>     |
| <ul style="list-style-type: none"> <li>• <i>Earthquake management</i></li> </ul>  | <i>Exercise – Scenario 03</i>           | <i>Facilitators' notes, SITMAN, reference docs</i>     |
| <ul style="list-style-type: none"> <li>• <i>Accidental TIM release management</i></li> </ul>  | <i>Exercise – Scenario 04</i>           | <i>Facilitators' notes, SITMAN, reference docs</i>     |
| <ul style="list-style-type: none"> <li>• <i>Natural outbreaks and epidemic management</i></li> </ul>  | <i>Exercise – Scenario 05</i>           | <i>Facilitators' notes, SITMAN, reference docs</i>     |
| <ul style="list-style-type: none"> <li>• <i>Sabotage of industrial unit and consequent release of TIM (TIB/TIC/TIR) and management</i></li> </ul>   | <i>Exercise – Scenario 06</i>           | <i>Facilitators' notes, SITMAN, reference docs</i>     |
| <ul style="list-style-type: none"> <li>• <i>Intentional release of CBR agents management</i></li> </ul>   | <i>Exercise – Scenario 07</i>           | <i>Facilitators' notes, SITMAN, reference docs</i>     |
| <ul style="list-style-type: none"> <li>• <i>Intentional release of radiological sources (RDDs) management</i></li> </ul>  | <i>Exercise – Scenario 08</i>           | <i>Facilitators' notes, SITMAN, reference docs</i>     |
| <ul style="list-style-type: none"> <li>• <i>Sabotage in a Nuclear Power Plant (NPP) and consequent fall out and management of exposures</i></li> </ul>  | <i>Exercise – Scenario 09</i>           | <i>Facilitators' notes, SITMAN, reference docs</i>     |
| <ul style="list-style-type: none"> <li>• <i>Cyber-attack to critical infrastructures and consequent CBRNe events management</i></li> </ul>  | <i>Exercise – Scenario 10</i>           | <i>Facilitators' notes, SITMAN, reference docs</i>     |
| <i>After Action Review and conclusions</i>  | <i>Interactive lectures</i>             | <i>Facilitators' notes<br/>Exercise reference docs</i> |

## INTERNSHIP

---

**The internship can be requested in one of the Institutions/Entities cooperating with the International Master Courses in Protection against CBRNe events**

*September - December 2018*

## FINAL THESIS

---

*19 January 2019 (University of Rome Tor Vergata)*

Students shall attend at least 80% of all classes, lectures and activities.

At the end of the Master Course, only the students who have attended at least 80% of all classes, lectures and activities, have passed the Module-related exams as well as the final exam (with Thesis dissertation), and have duly paid all fees and charges, shall obtain the educational qualification "**2<sup>nd</sup> level University Master Course in Protection against CBRNe Events (60 ECTS)**" (*Master Universitario di II livello in Protezione da Eventi CBRNe under the Italian Law*).

# REMEDIAL SESSIONS

*23-27 July 2018*

*11-15 December 2018*

