








3.00 credits

30.0 h

Q2

Teacher(s)	Dochain Denis ;
Language :	French
Place of the course	Louvain-la-Neuve
Main themes	The course describes the nature of the major industrial hazards, introduces the physico-chemical modelling of the source term, the modelling of the dispersion of effluents, the design of safeguard systems, and the existence of the human factor. Moreover, it describes the context in which the engineer operates (economic, social and legal constraints), and introduces the safety culture and the quality culture.
Learning outcomes	<p><b>At the end of this learning unit, the student is able to :</b></p> <p>Considering the AA reference list of the programme "Master in Mechanical Engineering", this course contributes to the development , the acquisition and the evaluation of the following learning outcomes :</p> <ul style="list-style-type: none"> <li>• AA1.1, AA1.2, AA1.3</li> <li>• AA2.3, AA2.4, AA2.5</li> <li>• AA3.1, AA3.2</li> <li>• AA5.1, AA5.5, AA5.6</li> <li>• AA6.1, AA6.2</li> </ul> <p>1</p> <p>More precisely, at the end of the course, the student will be able :</p> <ul style="list-style-type: none"> <li>• to understand the notion of industrial risk, in particular via several major reference technological disaster</li> <li>• to use some techniques of evaluation and management of technological risks.</li> </ul>
Evaluation methods	<p>Three reports (visit of a Seveso type industrial site, play on role, computer exercise with a dispersion modelling tool) and discussion of the three reports.</p> <ul style="list-style-type: none"> <li>• Seveso type industrial visit : report of maximum 15 pages on the analysis of safety and environmental (pollution, wastes) of a present or former SEVESO site, or part of a SEVESO site, or of one risky industrial site (see list available on the icampus site of the course)</li> <li>• Play on role : report of maximum 15 pages for each group on the play on role, including an individual evaluation of the play on role</li> <li>• Computer exercise : report of maximum 15 pages</li> </ul> <p>Weighting : SEVESO work : 75%; play on role : 25%</p>
Teaching methods	Lectures and play on role
Content	Lectures aimed at developing a global approach of the studied problems. External speakers are regularly invited. The list of topics hereunder is given as an example: Elements of risk analysis. Hazards of the process industries: reference accidents. Hazards of the electro-nuclear industry; introduction to the biological effects of radiation; reference accidents. Dispersion models Elements of risk management. The human factor. The biological risk. Runaway reactions.
Inline resources	<a href="http://moodleucl.uclouvain.be/enrol/index.php?id=7833">http://moodleucl.uclouvain.be/enrol/index.php?id=7833</a>
Bibliography	Support de cours : Transparents du cours
Faculty or entity in charge	MECA

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Master [120] in Mechanical Engineering	MECA2M	3		
Master [120] in Chemical and Materials Engineering	KIMA2M	3		
Master [120] in Electro-mechanical Engineering	ELME2M	3		
Master [120] in Biomedical Engineering	GBIO2M	3		
Certificat universitaire de contrôle physique en radioprotection (Classe I)	RCPA9CE	3		
Interdisciplinary Advanced Master in Science and Management of the Environment and Sustainable Development	ENVI2MC	3		
Master [120] in Environmental Science and Management	ENVI2M	3		
Master [120] in Mathematical Engineering	MAP2M	3		