

# **EMSE 234: Management of Risk for Natural and Technological Hazards**

## **General Course Information**

EMSE 234.10 Management of Risk for Natural and Technological Hazards

## **Lead Instructor Information**

Lead Professor - Dr. J. Rene van Dorp  
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## **Course Description**

"Natural Hazards have always been part of human history. But in the modern world there is an increasing paradox between the outstanding achievements of science and medicine and the continuing destruction associated with the extremes of nature. Science itself is not without hazard and has led to the comparatively recent emergence of threats which arise from the misapplication and failure of technology. People and property are now at risk not only from geophysical events, such as earth quakes and floods, but also from industrial explosions, the release of toxic substances and major transport accidents." (Source: Environmental Hazards, Keith Smith 1992).

Risk managers have to manage risk in a meaningful manner. This requires that risk managers can function as intermediaries between quantitative risk assessors and risk takers (e.g. the institution employing the risk manager or more general the public). To that end it is important that risk managers have a common understanding of quantitative risk assessment techniques and their limitations as well as a common understanding of risk communication and risk perception issues.

Recommended Prerequisites: ApSc 115 and EMGT 269

Students are not expected to perform quantitative analyses similar to the analyses performed in the prerequisite classes. However, students will benefit more from and appreciate more the risk assessment\risk management concepts discussed in this class with a working knowledge of the prerequisite cases.

## **Course Objectives**

The objective of this course is to introduce students to these concepts by; (1) exposing them to material in the risk communication/risk perception literature; (2) introducing them to basic modeling techniques in quantitative risk assessment; (3) presenting a risk management framework

suitable for quantitative risk modeling and risk communication, and (4) presenting case studies related to technological hazards and natural hazards.

### **Method of Instruction**

Text: Course Handouts and Selected Journal Papers

Class Sessions: Students will be assigned reading assignments which they are expected to read before class. During class the material will be presented using slides. A copy of the slides may be viewed/printed from this site. Students are encouraged to do so before class to reduce the burden on taking notes.

To view or print a copy of the slides one needs to install adobe acrobat reader which students can download for free from <http://www.adobe.com/prodindex/acrobat/readstep.html>

Instruction : 1 hour and 30 minutes.

Break : 10 minutes.

Instruction : 1 hour and 20 minutes.

Total : 3 hours

Class Participation: Class Participation and Class Discussions are considered to be a vital part of the course. Students are expected to read the reading assignments before class and are expected to participate in discussion regarding the reading assignments. The instructor may select a student and ask her or him to briefly describe the reading to class.

### **Method of Evaluation**

Students are expected to complete reading assignments prior to the class indicated on the syllabus. Two in class quizzes will be given over the course. Students will be assigned to complete a proposal to address a risk problem of the students interest. The proposal needs to discuss & suggest the Risk Assessment/Risk Management approach to be used in the proposed work. The proposal should utilize Risk Assessment/Risk Management concepts discussed in class. The proposal should contain the following sections

1. Summary
2. Introduction
3. Objectives and Scope
4. Background
5. Proposed Work
6. Project Implementation
7. References

Section 1 may not exceed more than 1 page. Section 2 - Section 6 may not exceed more than 15 pages. Pages exceeding the limit set for the Proposal will be discarded in the review process.

Class Presentation: Explains why the student thought the topic discussed in the proposal required a risk assessment/risk management project. In the second part of the presentation the student needs to defend his suggested approach as if he is given the presentation to a client for proposal selection.

Grading: 30% QUIZ 1  
20% QUIZ 2  
35% Proposal  
15% Class Presentation

### **Reference Text Book**

The following book contains some of the journal papers we are discussing in class and additional materials useful for RFP and Proposal Development.

The Perception of Risk by Paul Slovic

Publisher: EarthScan  
[www.earthscan.co.uk](http://www.earthscan.co.uk)

ISBN: 1 85383 528 5 Paperback  
ISBN: 1 85383 527 7 Hardback

Check out the Publisher's web-site for additional publications on Risk Management/Risk Assessment.