Subject Description Form

Subject Code	CSE40430
Subject Title	Fundamentals of Risk Assessment and Management
Credit Value	3
Level	4
Exclusion	CSE430 Fundamentals of Risk Assessment and Management
Objectives	a. To learn the basic risk assessment process for human health impacts from various toxic emissions; b. To quantify multipathway exposure assessment measurement and estimation; and c. To integrate various risk issues, perceptions and communication, health risk assessment and management process, cost-effectiveness, and risk modeling.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: a. organize and make use of information from multiple disciplines; b. quantify pollutant transport and human exposure; c. construct probability distributions with limited data; d. develop and apply dose/response functions and to address uncertainty and variability; and e. to understand capabilities and limitations of risk assessments.
Subject Synopsis/ Indicative Syllabus	**Keyword Syllabus** a. Introduction to Risk Assessment Basic risk assessment process for human health impacts from various toxic emissions. b. Health risk formulation The screening risk assessment algorithm for cancer risk estimates will be used as an example to illustrate the unit risk factors for analysis of inhalation risk and potency factors for ingestion risk. c. Exposure Exposure concept, exposure assessment measurement and estimation, multipathway exposure. d. Risk estimation and measures Prioritization for regulatory risk assessment, regulatory risk estimation, loss of life expectancy and other risk measures, and comparative risk assessment. e. Risk management Risk issues, perceptions and communication, health risk assessment and management process, cost-effectiveness, and risk modeling, corporate social responsibility (CSR).

	f. <u>Case study</u> Case study of the a risk assessment including but not limit to the risk assessment at a workplace or public area; risk management strategy (or CSR) of a company and its ongoing development; environmental risk management and control strategy.
Teaching/Learning Methodology	A series of lectures will be given to introduce the principles of risk assessment and management. The lectures will cover hazard characterization, source and emissions, exposure assessment, and dose/response functions. Simultaneously, two assignments should be finished by students in order to fully capture the main contents of this course. Tutorials will provide a platform for students to solve any problems relating to the contents of the lecture. Case study includes preparation of presentation and report. Students should make critical literature reviews cooperatively about risk assessment and management cases.
Assessment Methods in Alignment with Intended Learning Outcomes	

Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed				
		a	b	c	d	e
1. Continuous Assessment	40	√	√	√	√	√
2. Written Examination	60	√	√	√	√	√
Total	100					

Students must attain at least grade D in both coursework and final examination (whenever applicable) in order to attain a passing grade in the overall result.

Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:

Course-work including one case study report (20%) and two minor assignments (20%)
Written examination is evaluated by final examination.

Student Study Effort Expected		**Average hours per week**
	Class contact:	
	▪ Lecture/ Tutorial/Seminar	3 Hrs.
	Other student study effort:	
	▪ Reading and Assignment	6 Hrs.
	Total student study effort	9 Hrs.

Reading List and References	**<u>Textbook</u>** Lawrence B. Gratt *Air Toxic Risk Assessment and Management*, Van Nostrand Reinhold, 1996. **<u>Reading list</u>** *Air Toxics And Risk Assessment*, Kenyon E. M., Lewis 1990, (RA576.5 C35, 1990) C. Richard Cothern, *Comparative Environmental Risk Assessment*, Lewis Publishers, 1992 *Handbook Of Air Toxics: Sampling, Analysis And Properties*, K. Lawrence, Lewis, 1995. John Frawley, *Risk Assessment and Environmental Fate Methodologies*, Council for the Health and Environmental Safety of Soils (CHESS), USA, 1992