

COURSE GUIDE – short form

Academic year 2014-2015

Course name	Risk analysis and expertise in Mechanical Engineering				Course code		MTC.DI.DS.106		
Course type	DS	Category	DI	Year of study	1	Semester	2	Number of credit points	8

Faculty	Mechanics	Number of teaching and learning hours							
Field	Mechanical Engineering	Total	L	T	LB	P	IS		
Specialization	Master	56	28		28		140		

Pre-requisites from the curriculum	Compulsory	Study of materials, Strength of Materials
	Recommended	Machine, Mechanisms

General objective	Acquiring knowledge necessary to carry out a risk analysis in an integrated risk management system. Acquiring knowledge necessary to perform the technical expertise of the equipment in operation. Specific terms: risk analysis, risk engineering, maintenance, diagnostics, reliability, variability, probability, statistics, frequency, consequences, dynamical systems, probability functions
Specific objectives	Based on this course will acquire the knowledge needed to carry out a risk analysis based on tools learned: risk matrix, fault tree, tree of events, Markov chains, reliability diagrams. There will be expert to solve problems of any kind incurred in the operation of a mechanical system. Survey methods learned will allow, on one hand, highlighting the essential elements for developing in-depth study and research when abnormalities on the other hand additional elements which do not neglect utility expertise. It will itself failure risk prediction methodology that combines statistical analysis of In-Service Inspection post-factum. They have learned new concepts that variability and uncertainty associated with any expertise on highlighting the risk of component failure. It will highlight and will clarify the influence of size parts, manufacturing defects, the cleavage in structural steels, fatigue and stress corrosion cracking on disposal tear.
Course description	Students who pass the "Risk analysis and expertise in mechanical engineering" will acquire the following terms: Terminology practice expertise: method, approach, instrument; Diagnostic tools and evaluation approach; Sources of risk, In-Service Inspection; Probabilistic models for risk assessment; Methods for determination of defects; Analytical models to detect and locate faults; Analysis of systems with faulty actuators; Maintenance system based on the diagnosis.

Assessment			Schedule	Percentage of the final grade (minimum grade)
Continuous assessment	Class tests along the semester		Week 9	15%
	Activity during tutorials/laboratory works/projects/practical work		Continuous	20%
	Assignments		Weeks 12-13	15%
Final assessment	Final assessment form	Exam.	Session	50%
	Examination procedures and conditions: Paper 50 %			

Course organizer	Prof. univ. dr. ing. Viorel Goanță		
Teaching assistants	Prof. univ. dr. ing. Viorel Goanță		