CHERNE 2015-16

Project Plan for CHERNE activities and other actions proposed to the network

Seminars of the UPV Master on Industrial Safety and Environment

NATURAL RADIOACTIVITY

Time schedule for the proposal of educational activities for students (proposals not addressed to students may be introduced at any time)	
Context	This project plan is meant to inform CHERNE partners and their students about an activity organised in the framework of the CHERNE network, taking into account the objectives of CHERNE as described in the CHERNE declaration www.upv.es/cherne
Definitions	IC: Intensive course, at least 1 week/2 ECTS SP: strategic partnership (may include intensive programmes and other actions) IP: intensive programme, part of the actions of a SP

Title of the project and acronym (if applicable)	**NATURAL RADIOACTIVITY** Protection against Natural Ionizing Radiation
Type of the project	Intensive course
Main objective of the project	This course plan to give an overview of human exposure to natural sources of ionizing radiation.
Short description of the project	The course combines lectures, computer exercises, and measurement of indoor radon. CONTENTS A. NATURAL RADIATION • A1 Introduction • A2 Cosmic rays • A3 Natural radioactivity B. EXPOSITION TO COSMIC RAYS • B1 factors affecting the dose • B2 Exposition of air crews: regulation C. EXTERNAL EXPOSITION TO NATURAL RADIONUCLIDES • C1 Radioactivity of the soil and of building materials • C2 Areas with high γ activity • C3 Building materials with high radioactivity • C4 Enhanced external exposition on workplaces D. INTERNAL EXPOSITION TO NATURAL RADIONUCLIDES • D1 Our unavoidable radioactivity

	• D2 Enhanced internal exposition of workers • D3 Radon E ENHANCED EXPOSITION TO NATURAL RADIOACTIVITY DUE TO HUMAN ACTIVITIES • E1 Regulation • E2 Industries using naturally radioactive materials • E3 Waste problems F. INDOOR RADON • F1 Introduction • F2 Origin of radon • F3 Radon production • F4 Radon migration • F5 Factors affecting the indoor pollution by radon • F6 Radon progeny in air • F7 Evaluation of the cancer risk • F8 What is a dangerous radon concentration? • F9 Indoor radon measurements • F10 Measurement of radon progeny and PAEC • F11 Prevention and mitigation • F12 Justification of mitigation in an existing building • F13 Justification of prevention in a new building • F14 Exposition to radon in workplaces.
Expected learning outcomes (if applicable)	Different aspects are developed e.g. identification of natural source, effects on human health, measurement techniques and mitigation techniques. During the course, 8 hours of laboratory are scheduled. During this practical part, the participants realize physical measurements and use numerical codes to evaluate the dose of ionizing radiations received in practical cases.
Date of the project	6 – 10 February 2017
Place(s) of the project	UPV – Valencia (Spain)
Coordinator(s)	Prof. José Ródenas, UPV, jrodenas@iqn.upv.es
Contact person (if different)	
Other partners	Dr. Isabelle Gerardy, Institut Supérieur Industriel de Bruxelles (ISIB), Haute Ecole Paul-Henri Spaak, Brussels (Belgium)
Is the partnership still open to more partners?	closed
Intended participants Expected present studying level of participants and their specialisation (if relevant)	The course is a Seminar of the UPV **Master** on Industrial Safety and Environment, offered to CHERNE institutions as far as places are free.
Prerequisites Expected initial knowledge	The participants must have a basic knowledge in chemistry and in nuclear physics (type of radioactive disintegration, period of a nuclear emitter,…)
Intended or maximal number of participants	10 Selection, if necessary, at home institutions.
Task force (if applicable)	NA

Working method, time schedule and deadlines for the organisation and for the task force	20 hours / 1 week The course combines lectures, computer exercises, and measurement of indoor radon.
Evaluation (of participants, by participants, by organisers, …)	Assessment of the student by oral presentation of a personal work.
Reporting and dissemination (if applicable)	NA
Is the project part of an Erasmus program?	No
ECTS or ECVET credits applicable? How many?	This course is representing 2 ECTS. No official ECTS, just a certificate signed by the director of the Department
Are any other industrial or research non CHERNE partners involved?	No
Terminology	CHERNE: Cooperation for Higher Education on Radiological and Nuclear Engineering UPV: Universidad Politécnica de Valencia
Practical organisation	Accommodation and meals: not organised
Costs for the students (if applicable)	Travel : not covered Accommodation : not covered No fee, no official ECTS, just a certificate signed by the director of the UPV Department of Nuclear Engineering
Extra information or conditions	• **Deadline for registration: 30 December 2016** • Communication of admittance: 15 January 2017
Anything else	A list of cheap hostels can be distributed to registered students.