

CES8AJ CE PETRUS

CES8AJ PETRUS - Storage of radioactive waste		ECTS Credits: 4 Duration: 36 hours	Semester: S8
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Keywords: storage			
Prerequisites: None			
Program and contents: This module is made in English. The course takes place on the two weeks at the end of June and on the first two weeks of September in Prague. The standard elective courses of the second semester are replaced by project hours. Content - Program > Introduction - Basic facts and definitions - Radioactivity and radioactive decay, nuclear collisions - Fuel management, Mining, milling and enrichment of uranium - Power reactor - Reprocessing and recycling uranium fuel, Waste treatment - Safety management > Transfer of radionuclides > Natural analogue - Varieties of analogue studies (Chemical, Natural, Archaeological) - Analogues of repository materials - Analogues of transport and retardation - Case histories (Oklo natural fission reactors, Cigar Lake mine, Inchtuthil Roman nails,) - Application of analogue information, support to safety demonstration > Probabilistic tools for safety management of the geological disposal - Multiple random variables, introduction to reliability methods, simulation of random variables - Monte Carlo methods: basic concept and variance reduction tools - Introduction to Sensitivity Analysis > Radioactive Waste Management - Quick reminder on fuel cycle and wastes associated with each step - Environmental impact, notions of radioprotection - Waste management program in France, in North America > Experimental Research on Nuclear Waste Disposal (2 weeks CTU Prague) - Thermal monitoring of underground structures - Polygon convergence measurement - Sprayed clay technology - Rock mass classification and gas permeability testing > Site characterisation methods in Geological Disposal of Nuclear Wastes - Introduction to the fundamental principles of NWM - IAEA Siting guidelines and specific safety requirements - Impacts to related research and technical applications: hydrogeology, rock engineering, mining - Hands-on-training on engineering geological and applied geophysical methods			
Evaluation:			
☒ Written test	☐ Continuous assessment	☐ Oral presentation	☒ Project
		☐ Written report	