ITER-Consult

TRAINING COURSE
''STRUCTURAL MECHANICS ANALYSIS & REQUIREMENTS''

DRAFT CARD

Course Objective: Provide formation on design criteria and safety requirements with introduction to applicable codes for safety review of structural mechanics in NPP and other NF. **Duration**: from two weeks to 2 months	
CONTENT	
Introduction to Nuclear Power Plants	Short description of current available technology and their basic conception
Structures, Piping System and components in NPP	Structures, piping system and main components in a NPP. Primary and secondary building, operational conditions, layout, etc.
Piping supports and restraints	Types of supports and restraints and related requirements.
Thermal Hydraulics in Nuclear Power Plant	General basis and reference conditions in normal and accident conditons
Safety Criteria and requirements for mechanical structures and materials in NPPs	Plant Design Conditions, Service Levels, Design Basis Transients and Accidents, BDBA.
Seismic design requirements and qualification	Design basis earthquake, FRS and TH
Reference standards	ASME III Piping : Introduction, Sections NB, NC, ND plus discussion of specific cases of interest (case 1: constrained bellow, case 2: water hammer, and review of the allowable material) ASME III Pipe Supports : Section NF
Application and use of structural codes	Study cases: Application and use of the GTSTRUDL code Application and use of the ANSYS code Application and use of the PIPESTRESS code
Finite Elements Method	Application of detail
Trainees individual activity related to:	- Tutorial activities on the use of ANSYS and PIPESTRESS codes; - Evaluation of the overprotection system.
Licensing review process and use of computer codes	- Identification of Safety criteria and requirements. - Approach and methodology for regulatory expert review - Main available software and use for review
Fracture Mechanics	Deterministic and probabilistic Fracture Mechanics (LEFM, NLFM)
LBB application	- Leak Before Break (LBB): approach and analysis - LBB: leak detection system and inspection - Regulatory approaches to LBB - Safety implication by LBB application - Computer codes for LBB analysis - LBB method and design criteria for NPP
