

SIC PROGRAMME - Fracture, Fatigue, Creep & Corrosion - July 2023

Monday		Tuesday		Wednesday		Thursday		Friday		
9:00	Introduction to the course. (NL/RAA/RA)	9:00	Answers to corrosion calculations.	9:00	Fundamentals of Fatigue and Fatigue Damage Tolerance. (Problem Sheet 6) (NL)	9:00	FEA Problem and Discussion of Problems 1-6. (NL)	9:00	Pitting corrosion fatigue Case Study. (RA & NL)	
9:20	Introduction to failure mechanisms. (NL)	9:20	Pipeline corrosion case study. (RA)							
9:50	Fundamentals of Fracture mechanisms. (NL)	9:50	Pitting & Pit-induced fatigue modelling. (RA)							
10:40 Coffee break										
11:00	Linear Elastic Fracture Mechanics (Problem Sheets 1 & 2) (NL)	11:00	Creep-Fatigue initiation assessment. (RAA) Creep Fracture Mechanics. (RAA)	11:00	Case Studies on High Temperature Fracture. (RAA)	11:00	Probabilistic Modelling in Structural Integrity Assessments. (Problem Sheet 7) & Introduction to Digital Twins. (NL)	11:00	Future Trends in High Temperature Assessment. (RAA)	
11:50 Coffee break										
12:00	Material Creep Deformation and Failure Models. (RAA)	12:00	Fracture Toughness, small-scale yielding. (Problem sheet 5) (NL)	12:00	Worked Examples on Creep Crack Growth. (RAA)	12:00	Case Studies on High Temperature Fracture. (RAA)	12:00	End of Course. Questions/ Discussions.	
13:00 Lunch										
14:00	Creep Stress Analysis of Uncracked Bodies under Steady and Cyclic Loading. (RAA)	14:10	Models for Creep Crack Initiation and Growth. (RAA)	14:00	Corrosion Fatigue - Introduction. (RA)	14:00	Creep-Fatigue Crack Growth Assessment. (RAA) Short Cracks in Creep-Fatigue. (RAA) Creep - Case Studies. (RAA)	14:00		End of Day 5.
14:50	J-Integral, HRR Field and Failure Assessment Diagram. (Problem Sheets 2 & 4) (NL)	14:50	Residual Stress Effects on Creep Fracture. (RAA) SCC introduction / Mechanisms & Methods of Assessment. (RA)	14:50	Corrosion Fatigue - Modelling / Mechanisms & Worked example. (RA)					
15:20 Coffee break										
15:40	Corrosion - Introduction & Calculations (RA)	15:40	Cracking. Introduction / Mechanisms, Methods and worked example. (RA) Hydrogen Embrittlement. (RA)	15:40	Corrosion Risk-based Inspection / Corrosion case study examples. (RA) / Design Aspects.	15:40	Advanced Computational Methods for Creep (RAA)			
17:00 End of day										
							19:00	Course Dinner		
								RAA: Prof. Robert Ainsworth RA: Prof. Robert Akid NL: Dr. Nicolás Larrosa		