

SUBJECT TEACHING GUIDE

708 - Structural Integrity Assessment Procedures

Master's Degree in Integrity and Durability of Materials, Components and Structures

Academic year 2024-2025

1. IDENTIFYING DATA					
Degree	Master's Degree in Integrity and Durability of Materials, Components and Structures			Type and Year	Compulsory. Year 1
Faculty	School of civil Engineering				
Discipline					
Course unit title and code	708 - Structural Integrity Assessment Procedures				
Number of ECTS credits allocated	4	Term	Semester based (2)		
Web					
Language of instruction	Spanish	English Friendly	Yes	Mode of delivery	Face-to-face

Department	DPTO. CIENCIA E INGENIERIA DEL TERRENO Y DE LOS MATERIALES				
Name of lecturer	ROBERTO LACALLE CALDERON				
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Office	E.T.S. de Ingenieros de Caminos, Canales y Puertos. Planta: + 0. DESPACHO (0006)				
Other lecturers	SERGIO CICERO GONZALEZ BORJA ARROYO MARTINEZ				

3.1 LEARNING OUTCOMES

- Students will become familiar with several structural integrity procedures in use today, being able to use them independently for performing structural integrity assessment of components.

4. OBJECTIVES

To know the particularities of the in-use structural integrity procedures

To perform structural integrity assessments based on the methodologies included in several procedures

To know the specific analysis methods for each failure mode of structures

6. SUBJECT PROGRAM	
CONTENTS	
1	Introduction to structural integrity assessment procedures
2	Assessment techniques for fracture/plastic collapse
3	Assessment techniques for fatigue
4	Assessment techniques for creep
5	Assessment techniques for environmental degradation
6	Structural integrity software
7	Evaluation

7. ASSESSMENT METHODS AND CRITERIA				
Description	Type	Final Eval.	Reassessn	%
Group works	Work	Yes	No	40,00
Final exam	Written exam	Yes	Yes	50,00
Laboratory workshop	Laboratory evaluation	Yes	Yes	10,00
TOTAL				100,00
Observations				
Course work is classified as a 'non-recoverable' activity insofar as it is prepared during the course of the subject				
Observations for part-time students				
The evaluation criteria for part-time students are the same than for the rest of students				

8. BIBLIOGRAPHY AND TEACHING MATERIALS
BASIC
FITNET Fitness-for-Service (FFS) Procedure - Volume 1, M. Kocak, S. Webster, J.J. Janosch, R.A. Ainsworth, R. Koers, eds., ISBN 978-3-940923-00-4, Printed by GKSS, Germany, 2008.
-BS7910:2019, Guide to methods for assessing the acceptability of flaws in metallic structures, British Standards, 2019.
-R6: Assessment of the Integrity of Structures Containing Defects, British Energy Generation, Report R/H/R6, Revision 4, 2001.
-R5, Assessment Procedure for the High Temperature Response of Structures, Procedure R5 Issue 3, British Energy, Gloucester, UK, 2003.
-API 579, Recommended Practice for Fitness for Service, Draft Issue 4, American Petroleum Institute, 1996.
-ASME Boiler and Pressure Vessel Code, Section XI, Rules for In-Service Inspection of Nuclear Power Plant Components, The American Society of Mechanical Engineers, 2010.