

## SUBJECT TEACHING GUIDE

M1473 - Bridges

Master's Degree in Civil Engineering

Academic year 2019-2020

1. IDENTIFYING DATA					
Degree	Master's Degree in Civil Engineering			Type and Year	Compulsory. Year 2
Faculty	School of civil Engineering				
Discipline	Bridges				
Course unit title and code	M1473 - Bridges				
Number of ECTS credits allocated	3	Term	Semester based (2)		
Web					
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. INGENIERIA ESTRUCTURAL Y MECANICA				
Name of lecturer	CARLOS ALONSO COBO				
E-mail	carlos.alonso@unican.es				
Office	E.T.S. de Ingenieros de Caminos, Canales y Puertos. Planta: + 2. DESPACHO (2070)				
Other lecturers	JAVIER TORRES RUIZ ALVARO GAUTE ALONSO				

### 3.1 LEARNING OUTCOMES

- Knowledge of general and specific peculiarities of project, calculation and bridges control.
- Knowledge of general and specific peculiarities of bridges construction.
- Knowledge of current regulation about project, execution and bridge control

#### 4. OBJECTIVES

History. Materials. Actions
Basic tipology
Bridge construction
Deck of concrete beams
Concrete slabs
Analysis of Isostatic and straight decks
Analysis and design of continuous decks built on falsework
Decks with Box-shaped cross section
Skewed and curve bridges
Railroad bridges
Abutments, piers, bearings and foundations
Bridges constructed by advancement in cantilever
Bridge construction using the incremental launching method
Cable stayed bridges, arch bridges

#### 6. COURSE ORGANIZATION

CONTENTS	
1	Materials. Actions. Basic tipologies. Beam decks. Slabs. Decks with Box-shaped cross section (concrete and composite bridges)
2	cable stayed bridges, arch bridges. Shape analysis
3	Materials. Actions. Basic tipologies. Beam decks. Slabs. Decks with Box-shaped cross section (concrete and composite bridges) cable stayed bridges, arch bridges. Shape analysis Bridge construction. Abutments, piers, bearings and foundations. Load testing

#### 7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Practical Exercises	Work	No	Yes	20,00
Theory Exam	Written exam	Yes	Yes	40,00
Practical Exercises	Written exam	Yes	Yes	40,00
<b>TOTAL</b>				<b>100,00</b>
<b>Observations</b>				
<p>The students will have to carry out the practical and laboratory exercises proposed in class and a job, all of which must be done during the course.</p> <p>At the end of the course there will be a written examination with theoretical questions and a practical exercise.</p> <p>The written examination consists of two parts: a theoretical that represents 40% of the final note, where a minimum note of 3 is to be obtained, and a practical exercise representing the other 40%.</p>				
<b>Observations for part-time students</b>				
Students enrolled in part-time must obtain 100% of the note in the written year.				

## 8. BIBLIOGRAPHY AND TEACHING MATERIALS

### BASIC

Instrucción de Acciones de Puentes de Carretera IAP11  
Instrucción de Acciones de Puentes de ferrocarril IAPF07  
Norma Sismica de Puentes NCSP07  
Colección de libros sobre PUENTES de J. Manterola  
Estibos de puentes J. Arenas; Ángel Aparicio  
Pilas de puentes de tramo recto J. Arenas Ángel Aparicio