

250471 - PONTES - Bridges

Coordinating unit:	250 - ETSECCPB - Barcelona School of Civil Engineering
Teaching unit:	751 - DECA - Department of Civil and Environmental Engineering
Academic year:	2019
Degree:	MASTER'S DEGREE IN CIVIL ENGINEERING (PROFESSIONAL TRACK) (Syllabus 2012). (Teaching unit Optional) MASTER'S DEGREE IN CIVIL ENGINEERING (PROFESSIONAL TRACK) (Syllabus 2012). (Teaching unit Optional) MASTER'S DEGREE IN GEOTECHNICAL AND EARTHQUAKE ENGINEERING (Syllabus 2009). (Teaching unit Optional) MASTER'S DEGREE IN STRUCTURAL AND CONSTRUCTION ENGINEERING (Syllabus 2009). (Teaching unit Optional) MASTER'S DEGREE IN GEOTECHNICAL ENGINEERING (Syllabus 2015). (Teaching unit Optional) MASTER'S DEGREE IN STRUCTURAL AND CONSTRUCTION ENGINEERING (Syllabus 2015). (Teaching unit Optional)
ECTS credits:	5
Teaching languages:	Catalan, Spanish, English

Teaching staff

Coordinator:	JUAN RAMON CASAS RIUS
Others:	ANGEL CARLOS APARICIO BENGOCHEA, JUAN RAMON CASAS RIUS, GONZALO RAMOS SCHNEIDER

Degree competences to which the subject contributes

Specific:

8162. Knowledge of all kinds of structures and materials and the ability to design, execute and maintain structures and buildings for civil works.

8228. Knowledge of and competence in the application of advanced structural design and calculations for structural analysis, based on knowledge and understanding of forces and their application to civil engineering structures. The ability to assess structural integrity.

Transversal:

8559. ENTREPRENEURSHIP AND INNOVATION: Being aware of and understanding the mechanisms on which scientific research is based, as well as the mechanisms and instruments for transferring results among socio-economic agents involved in research, development and innovation processes.

8560. SUSTAINABILITY AND SOCIAL COMMITMENT: Being aware of and understanding the complexity of the economic and social phenomena typical of a welfare society, and being able to relate social welfare to globalisation and sustainability and to use technique, technology, economics and sustainability in a balanced and compatible manner.

8561. TEAMWORK: Being able to work in an interdisciplinary team, whether as a member or as a leader, with the aim of contributing to projects pragmatically and responsibly and making commitments in view of the resources that are available.

Learning objectives of the subject



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Study load

Total learning time: 125h	Theory classes:	19h 30m	15.60%
	Practical classes:	9h 45m	7.80%
	Laboratory classes:	9h 45m	7.80%
	Guided activities:	6h	4.80%
	Self study:	80h	64.00%

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Content

Generals Themes	Learning time: 24h Theory classes: 10h Self study : 14h
Structural behaviour and Design criteria for deck cross sections	Learning time: 16h 48m Theory classes: 7h Self study : 9h 48m
Bridge Bearings, Piers and Abutments	Learning time: 12h Theory classes: 5h Self study : 7h
Bridge Deck Structural Analysis by the Grillage method	Learning time: 7h 11m Practical classes: 3h Self study : 4h 11m
Evaluations	Learning time: 14h 23m Laboratory classes: 6h Self study : 8h 23m
Design and Construction of segmental prestressed concrete bridges	Learning time: 19h 12m Theory classes: 8h Self study : 11h 12m

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Bibliography

Basic:

Aparicio, Angel C.; Casas, Juan Ramon. Apuntes de la asignatura "Puentes".

Leonhardt, F. Ponts : l'esthétique des ponts = Puentes : estética y diseño. Lausanne: Presses Polytechniques Romandes, 1986. ISBN 2880740991.

Arenas, J.J.; Aparicio, A.C. Estribos de puente de tramo recto : concepción, diseño, cálculo. Santander: Departamento de Tecnología de las Estructuras, Universidad de Santander, 1984.

Arenas, J.J.; Aparicio, A.C. Aparatos de apoyo para puentes y estructuras. Santander: Universidad. E.T.S. de Ingenieros de Caminos, Canales y Puertos. Cátedra de Puentes, 198. ISBN 8460022439.

Calgaro y Virlogeux. "Projet et Construction des ponts" (2 tomos). Presses de L'Ecole Nationales des Ponts et Chaussées, Menn, C. Prestressed Concrete Bridges. Brasel: Birkhäuser Verlag, 1990. ISBN 0817624147.

. E.CHambly. Bridge deck behaviour. 2nd ed. New York: Chapman and Hall, 1991. ISBN 0419172602.

Manterola, J. Puentes: apuntes para su diseño, cálculo y construcción. Madrid: Colegio de Ingenieros de Caminos,, 2006. ISBN 9788438003237.

Fernández, L. Tierra sobre el agua : visión histórica universal de los puentes. Madrid: Colegio de Ingenieros de Caminos, Canales y Puertos, 2004. ISBN 8438002714.