

250475 - ESTMIXCOMP - Mixed and Composite Structures

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 STRUCTURAL AND CONSTRUCTION ENGINEERING (Syllabus 2015). (Teaching unit Optional) MASTER'S DEGREE IN STRUCTURAL AND CONSTRUCTION ENGINEERING (Syllabus 2009). (Teaching unit Optional) 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)
ECTS credits:	5
Teaching languages:	Catalan, Spanish, English

Teaching staff

Coordinator:	ENRIQUE MIRAMBELL ARRIZABALAGA
Others:	ANTONIO RICARDO MARI BERNAT, ENRIQUE MIRAMBELL ARRIZABALAGA

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

Overview	Learning time: 7h 11m Theory classes: 3h Self study : 4h 11m
Structural behavior. Time dependent effects	Learning time: 7h 11m Theory classes: 2h Practical classes: 1h Self study : 4h 11m
The prestressed composite structures. Ultimate limit states	Learning time: 7h 11m Theory classes: 2h Practical classes: 1h Self study : 4h 11m
Serviceability limit states	Learning time: 7h 11m Theory classes: 2h Practical classes: 1h Self study : 4h 11m
Shear connection	Learning time: 7h 11m Theory classes: 2h Practical classes: 1h Self study : 4h 11m
Construction process	Learning time: 7h 11m Theory classes: 2h Practical classes: 1h Self study : 4h 11m

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Composite columns	Learning time: 7h 11m Theory classes: 2h Practical classes: 1h Self study : 4h 11m
Composite slabs with profiled sheet	Learning time: 7h 11m Theory classes: 2h Practical classes: 1h Self study : 4h 11m
Composite bridges	Learning time: 7h 11m Theory classes: 3h Self study : 4h 11m
Composite structures with different types of concrete	Learning time: 21h 36m Theory classes: 9h Self study : 12h 36m
Evaluation	Learning time: 7h 11m Laboratory classes: 3h Self study : 4h 11m

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Bibliography

Basic:

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- Johnson RP. Composite Structures of Steel and Concrete. 3rd. Blackwell Publishing, 2004.
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- A. Ghali, R. Favre, M. Elbadry. Concrete Structures: Stresses and Deformations: Analysis and Design for Serviceability. 3rd. New York: Taylor and Francis, 2002. ISBN 0-203-98752-7.
- R. I. Gilbert, G. Ranzi. Time dependent behaviour of concrete structures. New York: Taylor and Francis, 2011. ISBN 0-203-87939-2.