



## Teaching Guide

| Teaching Guide      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |        |               |           |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------|-----------|
| Identifying Data    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |        | 2022/23       |           |
| Subject (*)         | Construction III [In extinction]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Code   |               | 670G01017 |
| Study programme     | Grao en Arquitectura Técnica                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |        |               |           |
| Descriptors         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |        |               |           |
| Cycle               | Period                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Year   | Type          | Credits   |
| Graduate            | 2nd four-month period                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Second | Obligatory    | 6         |
| Language            | Spanish                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |        |               |           |
| Teaching method     | Face-to-face                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |        |               |           |
| Prerequisites       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |        |               |           |
| Department          | Construcións e Estruturas Arquitectónicas, Cívís e Aeronáuticas                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |        |               |           |
| Coordinador         | Blas Corral, Francisco                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | E-mail | f.blas@udc.es |           |
| Lecturers           | Blas Corral, Francisco                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | E-mail | f.blas@udc.es |           |
| Web                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |        |               |           |
| General description | <p>ASIGNATURA EN EXTINCIÓN C-III (GAT1): -"CARECE DE DOCENCIA"-</p> <p>Al tratarse de una asignatura del segundo curso y una de las específicas de la titulación, el alumno debe de revisar y prestar atención a los contenidos previos adquiridos durante la etapa anterior a su acceso; en especial a las materias de física/estructuras, geometría, dibujo, C-I y C-II.</p> <p>En el desarrollo de la materia, se impartirán los conocimientos básicos y generales, de los elementos fundamentales que forman parte de los procesos constructivos de sistemas estructurales de hormigón armado fundamentalmente.</p> <p>El aprendizaje completo de la asignatura, va ligado a otras materias del propio segundo curso de la carrera como: materiales construcción, estructuras de edificación y expresión gráfica.</p> <p>.../...</p> |        |               |           |

## Study programme competences

| Code | Study programme competences                                                                                                                                                                                                                                        |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A4   | Coñecer as técnicas e procesos de restauración, rehabilitación, acondicionamento, patoloxía, mantemento e conservación dos edificios en xeral e en particular aqueles específicos do patrimonio cultural constituído pola arquitectura popular e histórica galega. |
| A22  | Administrar e xestionar a adquisición dos materiais, sistemas e recursos propios do proceso construtivo.                                                                                                                                                           |
| A24  | Planificar e xestionar a conservación, mantemento, explotación e uso do edificio así como a inspección técnica do mesmo.                                                                                                                                           |
| B7   | Capacidade de traballo en equipo.                                                                                                                                                                                                                                  |
| B9   | Capacidade para traballar nun contexto internacional.                                                                                                                                                                                                              |
| B13  | Compromiso ético.                                                                                                                                                                                                                                                  |
| B15  | Adaptación a novas situacións.                                                                                                                                                                                                                                     |
| B21  | Motivación pola calidade.                                                                                                                                                                                                                                          |
| B30  | Sensibilidade cara a temas relacionados coa protección, conservación e posta en valor do patrimonio cultural e arquitectónico.                                                                                                                                     |
| C1   | Adequate oral and written expression in the official languages.                                                                                                                                                                                                    |
| C3   | Using ICT in working contexts and lifelong learning.                                                                                                                                                                                                               |
| C4   | Acting as a respectful citizen according to democratic cultures and human rights and with a gender perspective.                                                                                                                                                    |
| C5   | Understanding the importance of entrepreneurial culture and the useful means for enterprising people.                                                                                                                                                              |
| C6   | Acquiring skills for healthy lifestyles, and healthy habits and routines.                                                                                                                                                                                          |
| C7   | Developing the ability to work in interdisciplinary or transdisciplinary teams in order to offer proposals that can contribute to a sustainable environmental, economic, political and social development.                                                         |
| C8   | Valuing the importance of research, innovation and technological development for the socioeconomic and cultural progress of society.                                                                                                                               |

## Learning outcomes

| Learning outcomes | Study programme competences |
|-------------------|-----------------------------|
|-------------------|-----------------------------|



|                                                                                                                                                                                               |     |                                      |                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|--------------------------------------|----------------------------------------|
| El alumno será capaz de conocer los materiales, tecnologías, equipos, sistemas y procesos constructivos propios de la edificación en general y en particular aquellos específicos de Galicia. | A4  | B7<br>B9<br>B13<br>B15<br>B21<br>B30 | C1<br>C3<br>C4<br>C5<br>C6<br>C7<br>C8 |
| El alumno será capaz de administrar y gestionar la adquisición de materiales, sistemas y recursos propios del proceso constructivo.                                                           | A22 | B7<br>B9<br>B13<br>B15<br>B21<br>B30 | C1<br>C3<br>C4<br>C5<br>C6<br>C7<br>C8 |
| El alumno será capaz de gestionar la conservación, mantenimiento, explotación y uso del edificio así como la inspección técnica del mismo.                                                    | A24 | B7<br>B9<br>B13<br>B15<br>B21<br>B30 | C1<br>C3<br>C4<br>C5<br>C6<br>C7<br>C8 |

| Contents |           |
|----------|-----------|
| Topic    | Sub-topic |



## 1.- STRUCTURAL CONCRETE CONSTRUCTION.

### COURSE SYLLABUS:

1.1.- Historical background: Brief survey of characteristics and properties of concrete. Actual present knowledge of concrete technology. Regulations. EHE Instruction. Spanish Building Code.

1.2.-Basic knowledge of reinforced concrete: The adhesion between concrete and steel. Continuity and chained monolithic reinforced concrete structures. Protection of rebars. Incompatibilities. Durability.

1.3.-Preparing and Setting-up fresh concrete: Mixing in-situ concrete. Ready-mix concrete. Characteristics. Conditions of complete feeding of the fresh concrete delivered. False full cure. Transporting concrete. Setting-up fresh concrete. Pouring and compacted. Setting-up fresh concrete with pump. Sprayed concrete (gunning). Use of additives. Superfluidifiers, Self-compacting concretes. Curing concrete: Precautions. Concreting in cold weather. Concreting in hot weather. Concreting joints.

1.4.-Steel reinforcement: Steels applying to building construction. Identification of steel bars. Geometrical characteristics, mechanical, adherents, apting for welding

1.5.- Types of steel reinforcement: Diameter. Maximum and minimum distances between bars. Corrosion Protection coatings: distance between parameters. Geometric quantities of the reinforcements. Mandrel diameters, hooks of the negative bending and bending bars.

1.6.-Anchoring of reinforcement Steel bar: Types of anchoring. Fittings: overlap, solder, sleeve. Types of anchoring. Mechanical anchoring . Welding

1.7.-Concrete skeletal: Portal Framed structures. Columns. Beams. Cantilever. Cross bars. Bracings and chained. General concepts. Arrangement of reinforcements depending on their mechanical work and the execution conditions. Parts curved path. Broken parts. Execution conditions.

1.8 - Discontinuity in concrete. Staple Regions. Systems struts and ties. Concentrated loads on solid. Joints: Concepts, utility and generalities. Types of joints. Plastic hinges. Deep beams. Corbel.

1.9 - Surface elements. Slabs and supported / embedded in two or more sides plates. Surface systems supported on pillars plates and waffle slabs. Reinforced concrete basement walls: Load-bearing walls. Retaining walls: Types, design criteria. Diaphragm walls. Conditions of execution.

1.10 - Floors: Concept and tough mission. Types of floors. Specific floors: slabs. Conditions of execution. Applicable regulations.

1.11 -Concrete stairs: Typology. Stringers. Slabs. Structural organization. Conditions of execution.

1.12 - Foundations: General. Polls. Precautions and safety conditions. Different types of concrete foundations. Shallow foundations. Rigid pile caps and footings. Flexible footings. Footings, continuous, and combined. Foundation slabs. Deep Foundations: Piles. Typology. Procedures placing. Pile caps. Diaphragm walls. Shoring and anchors. Conditions of execution.

1.13 - Pathology and therapeutic of structural concrete: pathological aspects. Causes of the main pathologies. Symptoms. Repair of structural damage. Determination of the etiology of injury.

1.14 - Prestressed concrete: Concept of prestressing. Historical data. Materials used and their characteristics. Tensioning Systems. Tensioning devices. Cats and anchors. Pods. Splicing of armatures. Injection and sealing. Current regulations and recommendations. Execution Control of prestressed concrete. Tolerances.



## Planning

| Methodologies / tests  | Competencies                                                | Ordinary class hours | Student's personal work hours | Total hours |
|------------------------|-------------------------------------------------------------|----------------------|-------------------------------|-------------|
| Objective test         | A4 A22 A24 B7 B9<br>B13 B15 B21 B30 C1<br>C3 C4 C5 C6 C7 C8 | 4                    | 145                           | 149         |
| Personalized attention |                                                             | 1                    | 0                             | 1           |

(\*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

## Methodologies

| Methodologies  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Objective test | <p>THEORETICAL EXAM: Written test used to assess learning process.</p> <p>Mainly, it will be one of the two following ways:</p> <p>1.- SHORT ANSWER TEST (VIÑETAS-TYPE): Written test to recover learning. It is presented a question to answer, with a definition, classification, brief or similar, and/or required graphic detailing</p> <p>2.- MULTIPLE ANSWER TEST: Written test to select the correct answer between several options.</p> <p>For this methodology it is scheduled about 1:00 presential hours maximum</p> |

## Personalized attention

| Methodologies  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Objective test | <p>This activity can unfold in person (directly in the classroom and / or times that the teacher has assigned to tutoring office) or non-contact (through email or virtual campus, through spaces Moodle communication tool).</p> <p>Two distinct and complementary operational are distinguished:</p> <p>1 -SMALL GROUP TUTORING: its realization is important to consult with the teacher the progress that is being gradually implemented to provide the necessary guidance and in each case to ensure the quality of the work according to the criteria that you specify.</p> <p>Monitoring should preferably collectively according to the teacher being individualized monitoring if deemed necessary in the exposed operational.</p> <p>2 -PERSONALIZED SERVICE OF TUTORING: Recommended for use by students, with the teacher every booking time to address and resolve the doubts of the students regarding specific aspects of the subject.</p> <p>Generally must be requested in advance for the teacher to organize and establish its realization as it should be, as appropriate in each case. They must also be distributed throughout the course, avoiding concentrations on the eve of exams.</p> |

## Assessment

| Methodologies | Competencies | Description | Qualification |
|---------------|--------------|-------------|---------------|
|---------------|--------------|-------------|---------------|



|                |                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |     |
|----------------|-------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Objective test | A4 A22 A24 B7 B9<br>B13 B15 B21 B30 C1<br>C3 C4 C5 C6 C7 C8 | <p>THEORETICAL EXAM: At the first opportunity, throughout the semester four theoretical examinations, that in order to compute the% weighted established for the same is scheduled, it should reach half 4 out of a total of 10 points (s say 16 points out of a total of 40 points). The completion of these tests is set to YES essential requirement to pass the course. Failure to submit one of them will be an NP (not shown) at the first opportunity.</p> <p>Exceptionally, whenever it deems the affected (being specifically excluded) teacher, the student can adequately justify in writing, as early as possible the existence of any of the 6 events set forth in art. 12 (&amp;quot;Standards of evaluation, review and claim the qualifications of graduate and master&amp;quot; approved by the CG: 19-December 2013), the completion of the assessment test in question, in the last week class of the semester.</p> <p>The rating of at least the first 2 tests (50% of total), be made at least 3 days before the date set for the start of the evaluation period in the academic calendar, without prejudice to the publication of the final provisional ratings, having no overall assessment test matter, with 7 days before the end date of the closing of records.</p> <p>The second time (July), a single theoretical examination computing the 40% of the total, which have to reach 4 points out of 10 to proceed to this computation is scheduled.</p> <p>(See comments and other indications of this teaching guide).</p> <p>The objective test may be essentially one of the following two ways:</p> <p>1 - SHORT ANSWER TEST (TYPE-VIÑETAS). At the first opportunity will consist of 4 tests with 4 questions each in principle with the same score each, otherwise it will indicate the margin the corresponding score. Time 16 minutes.</p> <p>The second time will be composed of one test with 5 questions in principle with the same score each, otherwise it will indicate the margin the corresponding score. Time 20 minutes.</p> <p>Responses to ink will adhere to the area I boxed for each.</p> <p>Originally examination students may not leave the room or leave the table-board working to end (except for just cause) and have collected all the students on the test.</p> <p>All graphic details will be made provided with precise information (dimensions, designations, etc..) For proper definition and / or interpretation by a supervisor.</p> <p>2 - MULTIPLE ANSWERS TEST (TYPE-TEST). At the first opportunity will be composed of 4 tests with 10 questions each. The valuation of the questions is the same for each, can be three cases: correct Replies +1.00 points, -0.60 points erroneous response, blank responses + / -0.00 points. Time 6 minutes.</p> <p>The second time will be composed of one test with 20 questions. The valuation of the questions is the same for each, can be three cases: correct Replies +0.50 points, -0.30 points erroneous response, blank responses + / -0.00 points. Time 12 minutes.</p> <p>The answer is considered correct is marked with a cross (X) in ink in the appropriate box.</p> <p>Any amended answer is void.</p> <p>There is always one and only one correct answer.</p> <p>Initiated any objective test modes listed above, students may not leave the room, or leave the table-board working to end (except for just cause) and have collected all the students on the test.</p> <p>(See comments and other indications of this teaching guide).</p> | 100 |
|----------------|-------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|



| Assessment comments           |
|-------------------------------|
| st1:#{behavior:url(#ieooui) } |

| Sources of information |
|------------------------|
|------------------------|



|       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Basic | <p>REFERENCIAS BIBLIOGRÁFICAS</p> <p>CONSTRUCCIÓN III OBSERVACIONES: En el campo [Resumen], se indica, con tres asteriscos la bibliografía básica, con dos la de apoyo y con uno la recomendada para consulta o ampliación de cuestiones puntuales. También se reseña el Centro de la UDC donde localizarla con sus signaturas, que se completaran con las ediciones más recientes. Apartados: Tratados Generales, Normas y Hormigón.</p> <p>TRATADOS GENERALES</p> <p>Enciclopedia de la construcción. Barcelona: Editores Técnicos Asociados, 1974; 1979. 9 v; Contiene: T.I : Detalles de arquitectura -- T.II : Cálculos y ensayos, estudios de los proyectos de proyectos I -- T.III : Cálculos y ensayos, estudios de los proyectos II. T.IV : Ejemplos de arquitectura I -- T.V : Ejemplos de arquitectura II -- T.VI : Técnicas de construcción I -- T. VII : Técnicas de construcción II. ISSN/ISBN: 84-7146-124-2. [Resumen: *. EUAT: 69/0001].</p> <p>AVENDAÑO PAISAN, Ramiro. Construcción I. Tecnología de la edificación. Madrid: Escuela Técnica de Arquitectura, 197-?. 143 p. [Resumen: **. EUAT: 69/0133 F].</p> <p>AVENDAÑO PAISAN, Ramiro. Construcción II y III. Madrid: Escuela Técnica de Arquitectura, 1970?. II.; 2 v; Contiene: V.1.Cantería, carpintería de armar. -- V.2. Ampliación: hormigón armado. [Resumen: ***. EUAT: 69/0131(2) A 2 c.2].</p> <p>AZCONEGUI MORÁN, Francisco; and CASTELLANOS MIGUÉLEZ, Agustín. El trabajo de la piedra guía práctica de la cantería. León: Escuela Taller de Restauración "Centro Histórico" : Editorial de los Oficios, 1993. ID: 377. ISSN/ISBN: 84-87469-45-0. [Resumen: *. EUAT: 69/0101 G].</p> <p>BAUD, G. Tecnología de la construcción. Barcelona: Blume, 1994. 447 p. ID: 354; G. Baud. ISSN/ISBN: 84-8076-060-5. [Resumen: *. EUAT: 69/0260 Ñ].</p> <p>HUERTA, Santiago. Arcos, bóvedas y cúpulas geometría y equilibrio en el cálculo tradicional de estructuras de fábrica. Madrid: Instituto Juan de Herrera, [2004]. ID: 381. ISSN/ISBN: 84-9728-129-2. [Resumen: *. EUAT: 69/0548 B].</p> <p>PARICIO ANSUATEGUI, Ignacio. La Construcción de la arquitectura. 3, La composición, la estructura. Barcelona: Institut de Tecnologia de la Construcció de Catalunya, 1994. 109 p. ID: 358; 3, La composición, la estructura / Ignacio Paricio. ISSN/ISBN: 84-7853-244-7. [Resumen: *. EUAT: 69/0563(3) C (DCA)].</p> <p>PARICIO ANSUATEGUI, Ignacio. La Construcción de la arquitectura. 1, Las técnicas. 3ª rev ed. Barcelona: Institut de Tecnologia de la Construcció de Catalunya, 1995. 117 p. ID: 356. ISSN/ISBN: 84-7853-291-9. [Resumen: *. EUAT: 69/0563(1) (DT)].</p> <p>PARICIO ANSUATEGUI, Ignacio. La Construcción de la arquitectura. 2, Los elementos. 3ª ed. Barcelona: Institut de Tecnologia de la Construcció de Catalunya, 1996. ID: 357; 2, los elementos.; 1 v. ; 23 x 24 cm; Los elementos. ISSN/ISBN: 84-7853-293-5. [Resumen: *. EUAT: 69/0563(2) (DT)].</p> <p>RÍO ZULUAGA, Juan M. La Construcción en las estructuras. 1st ed. Madrid: Del Río Zuluaga, Juan Manuel, 1991. 436 p. D.L.: M-34263-1991. ISSN/ISBN: 84-604-0450-1. [Resumen: ***. EUAT: 69/0383 E].</p> <p>RISEBERO, Bill. Historia dibujada de la arquitectura. Madrid: Celeste, 1993; 1991. 271 p. ID: 355; Bibliogr. ISSN/ISBN: 84-87553-16-8. [Resumen: *. EUAT: 72.03/0162].</p> <p>SCHMITT, Heinrich; and HEENE, Andreas. Tratado de construcción. 8ª rev y amp ed. Barcelona: Gustavo Gili, 2009. 709 p. ID: 353; Heinrich Schmitt, Andreas Heene. ISSN/ISBN: 978-84-252-2258-0. [Resumen: ***. EUAT: 69/0409 A].</p> <p>URBÁN BROTONS, Pascual; and MARCOS PORTAÑA, Enrique. Apuntes de construcción II-III Arquitectura Técnica. Alicante: Editorial Club Universitario, 1996. Pascual Urbán Brotons, Enrique Marcos Portaña.; v; V.II. Estructuras metálicas -- v.III. Estructuras de madera. ISSN/ISBN: 84-89522-33-2. [Resumen: **. EUAT: 624/0192 (3)].</p> <p>NORMASNTE's. 6ª ed. Madrid: Soft, 2005. [Recurso electrónico] : Normas tecnológicas de la edificación.; 1 disco compacto (CD-ROM; Colección completa de detalles NTE en formatos PDF, DWG, DXF, WMF, CSM, DGN y Presto. [Resumen: *. EUAT: CD-ROM/0003 G].</p> <p>Código técnico de la edificación : CTE. Madrid: Garceta, 2009. 1050 p. En port.: Incluye Orden VIV/984/2009 de 15 de abril.; Actualizado abril de 2009. ISSN/ISBN: 978-84-9372-089-6. [Resumen: ***. EUAT: 006/0122 ].</p> <p>España. Ministerio de Fomento. Centro de Publicaciones. EHE-08 : instrucción de hormigón estructural : con comentarios de los miembros de la Comisión Permanente del Hormigón. Serie Normativas (España. Ministerio de Fomento). 2ª ed. Madrid: Centro de Publicaciones, Ministerio de Fomento, 2009. 702 p. ISSN/ISBN: 978-84-498-0830-2. (Se mantiene esta referencia al ser la asignatura del GAT1, en extinción).[Resumen: ***. EUAT: 006/0119 U ].</p> <p>NOTA: Eurocódigos, Normas UNE , Normas NBE y Normas Tecnológicas afines a los temas del programa, las derogadas con carácter exclusivo de consulta.</p> <p>HORMIGÓN</p> <p>Hormigón. 1, In situ. Tectónica : monografías de arquitectura, tecnología y construcción. 5ª ed. Madrid: ATC ediciones, 2002. 113 p. 019: M. 4303-1996; 1, In situ.; In situ. [Resumen: *. EUAT: 69/0454 C (DT)].</p> <p>Hormigón. 2, Prefabricado. Tectónica : monografías de arquitectura, tecnología y construcción. 4ª ed. Madrid: ATC ediciones, 2003. 110 p. 019: M. 4303-1996; 2, Prefabricado. [Resumen: *. EUAT:69/0452 C (DT)].</p> <p>Hormigón. III. Tectónica : monografías de arquitectura, tecnología y construcción. Madrid: ATC Ediciones, 2007. 124 p. 019: M.4303-1996; III.; Proyectos: Toyo Ito et Associates, Jesús Aparicio Guisado, Ignacio Laguillo y Harald Schöneegger, Diego García-Setién y Silvia Sánchez. [Resumen: *. EUAT: 69/0452 C (DT)].</p> <p>CALAVERA, J. Drenaje de plantas bajas</p> |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



de edificios y drenaje e impermeabilización de sótanos. Monografías INTEMAC. Madrid: Intemac, 1998. 78 p. J. Calavera ...[et al.]. ISSN/ISBN: 84-87892-22-1. [Resumen: \*. EUAT: 69/0285]. CALAVERA, J. Aspectos visuales del hormigón visto, hormigón coloreado, hormigón con tratamientos superficiales. Monografías INTEMAC. Madrid: Intemac, 2000. 139 p. J. Calavera Ruiz ... [et al.]; Bibliografía. ISSN/ISBN: 84-87892-25-6. [Resumen: \*. EUAT: 691/0302 (DCA)]. CALAVERA, J. Cálculo de estructuras de cimentación. 4ª ed. Instituto Técnico de Materiales y Construcciones, 2000. 519 p. Bibliogr. ISSN/ISBN: 84-88764-09-X. [Resumen: \*\*\*. EUAT: 624/0360 J]. CALAVERA, J. Cálculo, construcción, patología y rehabilitación de forjados de edificación unidireccionales y sin vigas-hormigón metálicos y mixtos. 5ª ed. Madrid: Intemac, 2002. 1024 p. Índice.; Bibliogr. ISSN/ISBN: 84-88764-14-9. [Resumen: \*\*. EUAT: 624/0662 G (DCA) c.2]. CALAVERA, J. Proyecto y cálculo de estructuras de hormigón : en masa, armado y pretensado. 2ª ed. Madrid: Intemac, 2008. 2 v; De acuerdo con la nueva instrucción EHE-08 y EUROCÓDIGO EC-2. ISSN/ISBN: 84-88764-24-9; 84-88764-25-6; 84-88764-05-7. [Resumen: \*\*\*. EUAT: 624/0273(1)]. CALAVERA, J.; and Instituto Técnico de Materiales y Construcciones. Muros de contención y muros de sótano. 3ª ed. Madrid: Instituto Técnico de Materiales y Construcciones, 2001. 377 p. ISSN/ISBN: 84-88764-10-3. [Resumen: \*\*\*. EUAT: 624/0344 I (DCA)]. CALAVERA, J.; and Instituto Técnico de Materiales y Construcciones. Ejecución y control de estructuras de hormigón. Madrid: Intemac, 2004. 937 p. J. Calavera Ruiz... [et al.]. ISSN/ISBN: 84-88764-19-7. [Resumen: \*. EUAT: 624/0498 B (DCA)]. CALAVERA, J.; and Instituto Técnico de Materiales y Construcciones. Patología de estructuras de hormigón armado y pretensado. 2ª ed. Madrid: Intemac, 2005. 2 v. : il. ISSN/ISBN: 84-88764-21-9. [Resumen: \*\*. EUAT: 624/0605(1) 1]. CALAVERA, J.; and Instituto Técnico de Materiales y Construcciones. Fichas de ejecución de obras de hormigón. 3ª de acueo con EHE-08 ed. Madrid: Intemac, 2009. 76 p. ISSN/ISBN: 9788487892196. [Resumen: \*\*. EUAT: 691/0551]. CALAVERA, J.; Instituto Técnico de Materiales y Construcciones; and Asociación Nacional de Industriales de Ferralla. Manual de ferralla. 3ª ed. Madrid: Instituto Técnico de Materiales y Construcciones : Asociación Nacional de Industriales de Ferralla, 2003. 243 p. J. Calavera Ruiz...[et al.]. ISSN/ISBN: 84-88764-17-0. [Resumen: \*\*. EUAT: 691/0287 (DCA)]. GARCÍA MESEGUER, A. Estructuras de hormigón armado. 4ª , 1ª reimp ed. Madrid: Fundación Escuela de la Edificación, 2001. 3 v; v. 1. Materiales, ejecución, control, patología -- v. 2. Cálculo en estados límite--v. 2. Elementos estructurales. ISSN/ISBN: 84-86957-85-0; 84-86957-86-9; 84-86957-87-7. [Resumen: \*\*\*. EUAT: 624/0440(1)]. GONZÁLEZ-ISABEL, Germán. Hormigón de alta resistencia Características, dosificación, puesta en obra, posibilidades. Madrid: Intemac, 1993. 316 p. Germán González-Isabel. ISSN/ISBN: 84-87892-13-2. [Resumen: \*. EUAT: DEP2/3139 c.2]. Grupo Español del Hormigón. Comisión I - G.T. I/2. Hormigones de alta resistencia fabricación y puesta en obra. Boletín GEHO. Madrid: Geho, 1997. 113 p. Datos tomados de la cub. ISSN/ISBN: 84-89670-02-1. [Resumen: \*. EUAT: DEP2/0323 ]. JIMÉNEZ MONTOYA, P., et al. Hormigón armado. 15ª ed. Barcelona: Gustavo Gili, 2009. 629 p. Jiménez Montoya ; Álvaro García Meseguer, Francisco Morán Cabre, Juan Carlos Arroyo Portero.; En la port.: Ed. basada en la EHE 2008. Ajustada al código modelo y al eurocódigo EC-2.; Índice. Bibliogr. ISSN/ISBN: 978-84-252-2307-5. [Resumen: \*\*\*. EUAT: 624/0091]. LEONHARDT, Fritz; and MÖNNIG, Eduard. Estructuras de hormigón armado / pretensado. 6V. 2ª rev ed. Buenos Aires ; Barcelona etc.: El Ateneo, 1986-1988. Fritz Leonhardt, Eduard Mönnig.; ISSN/ISBN: 950-02-5242-2; 950-02-5259-7; 950-02-5263-5. [Resumen: \*. ETSA: INV (ARQ) 1062]. MARTÍN ANTÓN, Manuel L.; and GARRIDO HERNÁNDEZ, Antonio. La EHE explicada por sus autores. 2ª ed. Madrid: Leynfor Siglo XXI, 2003. 338 p. [Manuel L. Martín Antón ... [et al.] ; Antonio Garrido Hernández, coord.]. ISSN/ISBN: 84-9556005-4; 84-932834-3-6. [Resumen: \*. EUAT: 006/159]. PELLICER DAVIÑA, Domingo; and SANZ LARREA, Cristina. El hormigón armado en la construcción arquitectónica. 2ª adaptada a la EHE-08 y AI CTE ed. Madrid: Bellisco, 2010. 819 p. por Domingo Pellicer Daviña, Cristina Sanz Larrea.; Bibliogr. ISSN/ISBN: 978-84-96486-94-2. [Resumen: \*\*. EUAT: 624/0550]. SERRANO LÓPEZ, Miguel Á. Diseño de elementos de hormigón armado problemas resueltos de acuerdo con EHE. Biblioteca técnica universitaria. Madrid: Bellisco, 2002. 1 v. (pág. var; Estructuras; Adaptados a la EHE-98. ISSN/ISBN: 84-95279-55-X. [Resumen: \*\*. EUAT: 624/0463]. WINTER, George; and NILSON, Arthur H. Proyecto de estructuras de hormigón. Barcelona: Reverté, 2002. 721 p. George Winter, Arthur H. Nilson.; Elaborado sobre un libro de texto de L. C. Urquhart y C. E. O'Rourke. (2008 reimp). ISSN/ISBN: 84-291-2076-9. [Resumen: \*. EUAT: 624/290]. ???



|               |  |
|---------------|--|
| Complementary |  |
|---------------|--|

## Recommendations

Subjects that it is recommended to have taken before

Subjects that are recommended to be taken simultaneously

Subjects that continue the syllabus

## Other comments

Dado que el perfil principal de la asignatura esta referenciado a la "construcción estructural", se considera que cuanto mayor sea el conocimiento sobre estructuras, materiales; así como una amplia y desarrollada visión espacial junto con una soltura fluida en la expresión gráfica; son fundamentales para un menor esfuerzo y tiempo requerido a la hora de la comprensión y resolución de los aspectos tratados en la asignatura....//...

(\*)The teaching guide is the document in which the URV publishes the information about all its courses. It is a public document and cannot be modified. Only in exceptional cases can it be revised by the competent agent or duly revised so that it is in line with current legislation.