



## Teaching Guide

| Teaching Guide      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |        |                                                                                                                      |           |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------------------------------------------------------------------------------------------|-----------|
| Identifying Data    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |        |                                                                                                                      | 2016/17   |
| Subject (*)         | Física para a Arquitectura 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |        | Code                                                                                                                 | 630G02013 |
| Study programme     | Grao en Estudos de Arquitectura                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |        |                                                                                                                      |           |
| Descriptors         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |        |                                                                                                                      |           |
| Cycle               | Period                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Year   | Type                                                                                                                 | Credits   |
| Graduate            | 1st four-month period                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Second | Obligatoria                                                                                                          | 6         |
| Language            | SpanishEnglish                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |        |                                                                                                                      |           |
| Teaching method     | Face-to-face                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |        |                                                                                                                      |           |
| Prerequisites       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |        |                                                                                                                      |           |
| Department          | Tecnoloxía da Construción                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |        |                                                                                                                      |           |
| Coordinador         | Sabin Diaz, Patricia                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | E-mail | patricia.sabin@udc.es                                                                                                |           |
| Lecturers           | Cuba Cabana, Hilda<br>Dominguez Diez, Javier Faustino<br>Lamas Lopez, Valentin<br>López César, Isaac<br>Sabin Diaz, Patricia                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | E-mail | hilda.cuba@udc.es<br>javier.dominguez@udc.es<br>valentin.lamas@udc.es<br>isaac.lopez@udc.es<br>patricia.sabin@udc.es |           |
| Web                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |        |                                                                                                                      |           |
| General description | <p>The subject is divided into theoretical or lectures and practical part. The practical part is taught in small group. Teaching students on mobility programs will accommodate pedagogical conditions and special guardianship papers, as well as testing and assessment tests.</p> <p>In the lectures, the descriptive work of the teacher is dominant. The students have to participate in the development of this lectures in an active way. This work will be completed with the resolution of different exercises on topics suggested by the teacher during practical classes program.</p> <p>For the efficient use and improvement of the subject is essential:</p> <p>A) ATTENDANCE: The ongoing monitoring of both lectures and practices; so that in order to pass the course, you will need achieve a minimum of 80% of total aid.</p> <p>B) WORK SUPERVISED (maximum 2 points): They are divided into two sections</p> <p>AUTO EXERCISES: You will need to raise and resolve student individually at least 3 years of each of the items described in the section of the subject content. Delivery format is at the discretion of each teacher.</p> <p>TESTS: individualized and raised by the teacher throughout the school year without notice. These can be both theoretical and practical.</p> <p>To apply to the FINAL EXAM it is necessary obtain at least a 1 in this section.</p> <p>C) FINAL EXAM (Maximum 8 points): to be held at a date determined by the governing bodies of the ETSAC. This examination will consist of a multiple choice test [2 points.] And an objective test [6 points.], Taking his realization about four hours.</p> <p>Simultaneous compliance with paragraphs A) and B) allow the student to review the filing and obtaining a supplementary note to the final exam. In the July session may submit all students enrolled in the subject matter or may not have exceeded attendance controls. The approval is set in five out of ten possible according to the following breakdown: multiple choice test: 2points, objective test: 6points, supervised work: 2points.</p> |        |                                                                                                                      |           |

## Study programme competences

| Code | Study programme competences                                                                                                                                                    |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A8   | "Knowledge of the principles of thermodynamics, acoustics and optics adapted and applied to architecture and urbanism "                                                        |
| A9   | "Knowledge of the principles of fluid mechanics, hydraulics, electricity and electromagnetism adapted and applied to architecture and urbanism "                               |
| A63  | Development, presentation and public review before a university jury of an original academic work individually elaborated and linked to any of the subjects previously studied |



|     |                                                                                                                                                                                                                                                                                                   |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| B1  | Students have demonstrated knowledge and understanding in a field of study that is based on the general secondary education, and is usually at a level which, although it is supported by advanced textbooks, includes some aspects that imply knowledge of the forefront of their field of study |
| B2  | Students can apply their knowledge to their work or vocation in a professional way and have competences that can be displayed by means of elaborating and sustaining arguments and solving problems in their field of study                                                                       |
| B3  | Students have the ability to gather and interpret relevant data (usually within their field of study) to inform judgements that include reflection on relevant social, scientific or ethical issues                                                                                               |
| B4  | Students can communicate information, ideas, problems and solutions to both specialist and non-specialist public                                                                                                                                                                                  |
| B5  | Students have developed those learning skills necessary to undertake further studies with a high level of autonomy                                                                                                                                                                                |
| B6  | Knowing the history and theories of architecture and the arts, technologies and human sciences related to architecture                                                                                                                                                                            |
| B10 | Knowing the physical problems, various technologies and function of buildings so as to provide them with internal conditions of comfort and protection against the climate factors in the context of sustainable development                                                                      |
| C1  | Expressing themselves correctly, both orally and in writing, in the official languages of the autonomous region                                                                                                                                                                                   |
| C3  | Using basic tools of information technology and communications (ICT) necessary for the exercise of the profession and for lifelong learning                                                                                                                                                       |
| C5  | Understanding the importance of entrepreneurship and knowing the means available to the entrepreneur                                                                                                                                                                                              |
| C6  | Critically evaluate the knowledge, technology and information available to solve the problems they must face                                                                                                                                                                                      |
| C7  | Assuming as professionals and citizens the importance of learning throughout life                                                                                                                                                                                                                 |
| C8  | Assessing the importance of research, innovation and technological development in the socio-economic advance of society and culture                                                                                                                                                               |

| Learning outcomes             |     |                             |    |
|-------------------------------|-----|-----------------------------|----|
| Learning outcomes             |     | Study programme competences |    |
| FLUID MECHANICS AND HYDRAULIC | A8  | B1                          | C1 |
|                               | A9  | B2                          | C3 |
|                               | A63 | B3                          | C5 |
|                               |     | B4                          | C6 |
|                               |     | B5                          | C7 |
|                               |     | B6                          | C8 |
|                               |     | B10                         |    |
| HEAT TRANSFER IN REAL WALLS   | A12 | B1                          | C3 |
|                               | A49 | B2                          | C4 |
|                               | A54 | B3                          | C6 |
|                               |     | B4                          | C7 |
|                               |     | B5                          | C8 |
|                               |     | B6                          |    |
|                               |     | B7                          |    |
|                               |     | B10                         |    |
|                               |     | B11                         |    |
|                               |     | B12                         |    |
|                               |     | B20                         |    |
|                               |     | B28                         |    |
|                               |     | B29                         |    |
| ACOUSTIC                      | A8  | B1                          | C1 |
|                               | A9  | B2                          | C3 |
|                               | A63 | B3                          | C5 |
|                               |     | B4                          | C6 |
|                               |     | B5                          | C7 |
|                               |     | B6                          | C8 |
|                               | B10 |                             |    |

|                           |     |     |    |
|---------------------------|-----|-----|----|
| ELECTRICITY               | A8  | B1  | C1 |
|                           | A9  | B2  | C3 |
|                           | A63 | B3  | C5 |
|                           |     | B4  | C6 |
|                           |     | B5  | C7 |
|                           |     | B6  | C8 |
|                           |     | B10 |    |
| THEORY OF LIGHT AND COLOR | A8  | B1  | C1 |
|                           | A9  | B2  | C3 |
|                           | A63 | B3  | C5 |
|                           |     | B4  | C6 |
|                           |     | B5  | C7 |
|                           |     | B6  | C8 |
|                           |     | B10 |    |

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



|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FLUID MECHANICS AND HYDRAULIC | <p>INTRODUCTION</p> <p>HISTORY</p> <p>PROPERTIES OF FLUIDS</p> <p>HYDROSTATIC</p> <p>INTRODUCTION. PRESSURE AT A POINT</p> <p>BASIC PRINCIPLES</p> <p>FUNDAMENTAL EQUATION</p> <p>SUBMERGED SURFACE PRESSURES</p> <p>HYDROSTATIC THRUST</p> <p>PRESSURE CENTER</p> <p>PRISMA PRESSURE</p> <p>FUNDAMENTALS OF FLUID FLOW</p> <p>INTRODUCTION. RANKINGS FLOW</p> <p>LINES, POWER WIRES AND TUBES</p> <p>FLOW. DIMENSIONAL EQUATION. UNITS</p> <p>ENERGY IN A MOVING FLUID</p> <p>BERNOULLI THEOREM</p> <p>IDEAL FLUID</p> <p>REAL FLUID</p> <p>HYDRAULIC POWER</p> <p>FLUID FLOW MEASUREMENT</p> <p>FLUID FLOW IN PIPES</p> <p>INTRODUCTION. LAMINAR AND TURBULENT FLOWS</p> <p>DISTRIBUTION OF SPEED. BOUNDARY LAYER</p> <p>ADIMENSIONASL NUMBERS. REYNOLDS NUMBER</p> <p>SURFACE RESISTANCE. PRIMARY LOAD LOSSES</p> <p>GENERAL EQUATION</p> <p>MOODY CHART</p> <p>HIGH LOAD LOSSES</p> <p>BRANCHED PIPING SYSTEM SERIAL, AND PARALLEL. MALLAS</p> <p>OPEN CHANNEL FLOW</p> <p>FORMULA AND MANNING CHEZY</p> <p>FORCES DEVELOPED BY FLUID MOTION</p> <p>PRINCIPLES OF MOMENTUM - MOMENTUM</p> <p>FORCES ON ELBOWS</p> |
| HEAT TRANSFER IN REAL WALLS   | <p>COMBINED ACTION OF THREE MECHANISMS OF HEAT TRANSFER</p> <p>CONDITIONS OF WINTER</p> <p>INTRODUCTION</p> <p>HEAT TRANSFER THROUGH OPAQUE WALLS</p> <p>TEMPERATURE DISTRIBUTION IN THE SIDING</p> <p>HEAT TRANSFER AND VENTILATION INFILTRATIONS ARISING FROM LOCAL CONDITIONS OF SUMMER</p> <p>INTRODUCTION</p> <p>HEAT TRANSFER THROUGH OPAQUE WALLS</p> <p>THERMAL INERTIA SIDING</p> <p>HEAT TRANSFER THROUGH WALLS SEMITRANSSPARENT</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |



|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ACOUSTIC                  | <p>SOUND. FUNDAMENTAL CONCEPTS.</p> <p>AUDITORY PHYSIOLOGY.</p> <p>PHYSICAL ASPECTS OF SOUND.</p> <p>SOUND INSULATION.</p> <p>SOUND DAMPING.</p> <p>SOUND PACKAGING.</p> <p>ENERGY SYSTEMS SOUND ABSORBENT.</p> <p>SOUND ENERGY ABSORBING MATERIALS.</p> <p>ARCHITECTURAL ACOUSTICS.</p> <p>CTE - DB-HR</p>                                                                                                                                                                                                  |
| ELECTRICITY               | <p>INTRODUCTION</p> <p>ELECTRIC CHARGE</p> <p>ACT COULOMB</p> <p>CONCEPT OF ELECTRIC FIELD. LINES OF FORCE</p> <p>ELECTRIC POTENTIAL. ELECTRIC POTENTIAL DIFFERENCE</p> <p>ELECTRICITY</p> <p>OHM'S LAW</p> <p>RESISTIVITY</p> <p>ENERGY IN ELECTRICAL CIRCUITS. ELECTRIC POWER</p> <p>CURRENT.</p> <p>AC POWER. C. A. PHASE. C. A. PHASE</p> <p>DISTRIBUTION NETWORKS</p> <p>FEATURES. TYPES</p> <p>LOW VOLTAGE ELECTRICAL INSTALLATIONS</p> <p>A LOW VOLTAGE SUPPLY BUILDING</p> <p>PROTECTION SYSTEMS</p> |
| THEORY OF LIGHT AND COLOR | <p>INTRODUCTION. HISTORY.</p> <p>RADIO WAVES. FEATURES. CLASSIFICATION.</p> <p>SPREAD OF LIGHT. FRESNEL-HUYGENS PRINCIPLE. REFLECTION AND REFRACTION.</p> <p>PHOTOMETRIC QUANTITIES.</p> <p>EFFECT PURKINJE</p> <p>LIGHT FIGURES</p> <p>FLOW. INTENSITY. ILUMINANCIA. ILLUMINANCE</p> <p>REFLECTANCE, ABSOTANCIA AND TRANSMISSION.</p> <p>LIGHT AND VISION</p> <p>THE HUMAN EYE</p> <p>VISUAL PERFORMANCE FACTORS</p> <p>GLARE</p> <p>COLOR TEMPERATURE OF LIGHT</p> <p>COLOR THEORY</p>                     |

| Planning                       |                                                                                                      |                      |                               |             |
|--------------------------------|------------------------------------------------------------------------------------------------------|----------------------|-------------------------------|-------------|
| Methodologies / tests          | Competencies                                                                                         | Ordinary class hours | Student?s personal work hours | Total hours |
| Introductory activities        | <p>A8 A9 A63 B1 B4 B5</p> <p>B6 B7 B10 B29 B1 B2</p> <p>B3 B4 B5 B6 B10 C1</p> <p>C3 C5 C6 C7 C8</p> | 2                    | 1                             | 3           |
| Guest lecture / keynote speech | A12 A49 A54                                                                                          | 27                   | 40.5                          | 67.5        |



|                           |                                                            |    |     |     |
|---------------------------|------------------------------------------------------------|----|-----|-----|
| Problem solving           | B2 B3 B4 B5 B6 B7<br>B10 B11 B12 B20<br>B28 C3 C4 C6 C7 C8 | 22 | 22  | 44  |
| Objective test            | B2 B3 B4 B6 B11 B12<br>B28 B29 C3 C6                       | 5  | 0   | 5   |
| Multiple-choice questions | B2 B3 B4 B6 B7 B12<br>C3                                   | 1  | 0   | 1   |
| Diagramming               | A49 A54 B1 B3 B4<br>B29                                    | 0  | 0.5 | 0.5 |
| Glossary                  | B1 B3 B6 B7 B10 B11<br>B12                                 | 0  | 1   | 1   |
| Supervised projects       | A12 A49 A54 B1 B2<br>B3 B4 B10 B11 B12<br>B28 B29          | 2  | 20  | 22  |
| Workbook                  | A12 A49 A54 B1                                             | 0  | 5   | 5   |
| 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                                                                                                                                                                                                                                                                                     |
| Introductory activities        | Presentation on the subject, explaining its operation and objectives.                                                                                                                                                                                                                           |
| Guest lecture / keynote speech | Classes in which the teacher will present on the Board or of the audiovisual content of theoretical and practical matters                                                                                                                                                                       |
| Problem solving                | In small group class the teacher will present a series of case studies that will solve, partially or totally, with the help and advice of Professor.                                                                                                                                            |
| Objective test                 | Numerical and graphical issues on the contents of the material and the supporting literature will arise. It will assess the level of learning by the student of practical aspects of the subject                                                                                                |
| Multiple-choice questions      | A multiple choice test will assess the level of learning by the student theoretical and practical aspects of the subject.                                                                                                                                                                       |
| Diagramming                    | Brief introductions to each topic seek to relate the contents within the knowledge map of the race course in outline mode                                                                                                                                                                       |
| Glossary                       | O alumno elabora unha folla resumen con definicións, formulación e unidades físicas relacionadas con cada un dos temas da materia.                                                                                                                                                              |
| Supervised projects            | Students handed to the teacher at least five unsolved problems of each of the topics of matter, must be made on an individual and personal, will be delivered in paper format A4 manuscript. Serve, along with meeting attendance requirements, have access to additional grade for the course. |
| Workbook                       | The student selects and analyzes exercise and / or mechanical theory in the literature basic and further identified by teachers in this guide                                                                                                                                                   |

| Personalized attention                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Methodologies                          | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Supervised projects<br>Problem solving | Is subjected to an exhaustive control assistance and activity of the student. This is to demonstrate the autonomous work with the delivery of a series of fully solved exercises independently, must be at least 3 of each of the topics of matter, will be delivered on dates determined by the teacher in class.<br><br>The tutorial schedule for the realization of personalized attention to the student will be exposed in the notice board of the subject. |



| Assessment                |                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |               |
|---------------------------|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Methodologies             | Competencies                                      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Qualification |
| Supervised projects       | A12 A49 A54 B1 B2<br>B3 B4 B10 B11 B12<br>B28 B29 | The student will need to raise and resolve individually and customized exercises at least 3 of the items described in the section of the subject content, the teacher will establish in a timely manner throughout the course along with their deadline .<br>The student will need to exceed individualized testing and control raised by the teacher as long academic year, without notice of the completion thereof. These tests may be both theoretical and practical.<br>It is necessary to get at least 1 point to take examinations.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 20            |
| Multiple-choice questions | B2 B3 B4 B6 B7 B12<br>C3                          | Accuracy in answering ten questions about theoretical and practical aspects with four options, of which unless one is correct is desirable. The conditions of wrong answers will be expressed in the exercise . A minimum of 5 points is established in this test to pass the course. His calculation of the total valuation of the course is two points [2points.] No materials will be allowed of any kind, beyond pens.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 20            |
| Objective test            | B2 B3 B4 B6 B11 B12<br>B28 B29 C3 C6              | Three problems or case studies based on the syllabus and bibliography arise, students give numerical answer to each of them; having even represent the results graphically. The computation of the total of the course is six points [6 points.]<br>The exam is individual, non-compliance with this requirement will result in expulsion and implementing regulations. Mobile phones powered by the examination is strictly prohibited.<br>During the development of theoretical questionnaire no materials of any kind will be allowed beyond pens, while for the realization of the practical part form, calculator and drawing materials will be used.<br>Each exercise will be answered and will qualify in a statement DIN A3. Each exercise will be delivered independently, written in indelible ink on A4 and folded. The result is given in manner that is clearly visible, indicating the numeric value with precision and corresponding units. Invalid parties must be clearly void. The solution sheets and sheet title will be written the name of the student and his group to be edited | 60            |

| Assessment comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>For a favorable assessment the student must complete the different parts and attendance to introduce themselves, to a minimum of 80% of the total. The marking criteria are adapted to the reality of professional derivatives. As a general rule misconceptions are valued according to their severity, and may nullify the exercise. Also relevant to the commission of a numerical error, since the practice seeks concrete results. In this regard it is noted that a mistake of sign means an error of 200%.</p> <p>For a favorable assessment the student must complete the different parts and attendance to introduce themselves, to a minimum of 80% of the total. The marking criteria are adapted to the reality of professional derivatives. As a general rule misconceptions are valued according to their severity, and may nullify the exercise. Also relevant to the commission of a numerical error, since the practice seeks concrete results. In this regard it is noted that a mistake of sign means an error of 200%. The approved notices a note five out of ten possible. The publication of the notes will be made within the established time limits. The list of notes contain the date and time of the exam review to be held within the time limits set out in the Academic Regulations Assessments, Ratings and Complaints. In the July session may submit all students enrolled in the subject even when they have not exceeded attendance controls. The approval is set in five out of ten possible according to the following breakdown: multiple choice test: 2 points<br/>objective test: 6 points supervised works: 2 points</p> |

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



|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Basic</b>         | <ul style="list-style-type: none"> <li>- Mataix, C (1970). Mecánica de fluidos y máquinas hidráulicas. Madrid. Editorial Harla</li> <li>- Varios (2008). Fundamentos Físicos de la Arquitectura I. Departamento de Tecnología de la Construcción. ETSAC</li> <li>- Freire Tellado, M. &amp; Muñoz Vidal, M (2007). Introducción a las condiciones Térmicas en Edificación . Departamento de Tecnología de la Construcción . UDC</li> <li>- Varios (). Código Técnico de la Edificación . Ministerio de Vivienda</li> <li>- Josse, R (). La acústica en la construcción. Editorial Gustavo Gili.</li> <li>- Guerrero, A (). Instalaciones eléctricas en las edificaciones. Editorial McGraw-Hill</li> <li>- Ramírez Vázquez, J (). Luminotecnia. Editorial Ceac</li> </ul> |
| <b>Complementary</b> | <ul style="list-style-type: none"> <li>- Augé, R. (). Curso de electricidad general. Editorial Paraninfo</li> <li>- Agüera Soriano (). Mecánica de fluidos. Editorial Ciencia y Distribución</li> <li>- Giles, R. V (1982). Mecánica de fluidos e hidráulica. Editorial McGraw-Hill. Mexico</li> <li>- López Hernández, E &amp; Muñoz Vidal, M (1994). Introducción a las instalaciones de edificación. Departamento de Tecnología de la Construcción. A Coruña</li> <li>- Bueche, F. J (). Física para estudiantes de ciencias e ingeniería. Editorial McGraw-Hill.</li> <li>- Manuel Margarida (). Aislamiento térmico. Editorial Etasa.</li> <li>- Linares, J. &amp; Lloppis Regna (). Fundamentos de acústica. Universidad Politécnica de Valencia</li> </ul>         |

| Recommendations                                                                                                                                                                                                                                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Subjects that it is recommended to have taken before                                                                                                                                                                                                                              |
| Physics 1/630G01008                                                                                                                                                                                                                                                               |
| Subjects that are recommended to be taken simultaneously                                                                                                                                                                                                                          |
| Proxectos 3/630G01011<br>Análise Arquitectónico 1/630G01012<br>Xeometría da Forma Arquitectónica/630G01014<br>Historia da Arte/630G01015                                                                                                                                          |
| Subjects that continue the syllabus                                                                                                                                                                                                                                               |
| Estruturas 1/630G01019                                                                                                                                                                                                                                                            |
| Other comments                                                                                                                                                                                                                                                                    |
| & For proper monitoring of the subject is necessary prior mastery of the following topics by the students: - Logical Reasoning. - Unit systems. - Geometry and Trigonometry. - Derivation and integration. - Solving systems of equations. - Introduction to building materials.& |

(\*)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.