

# CONSTRUCTION I. HISTORY, TYPES AND FOUNDATIONS OF THE BUILDING

ACADEMIC YEAR 2016-17

This document has been translated at the beginning of the course and may suffer some changes throughout the academic year or next. Use it only for information or guidance. To see modifications, consult the updated Spanish version. Last revision: July 2014

MODULE	SUBJECT	YEAR	SEMESTER	ECTS	TYPE
Building Technology II	Construction I	1	1	6	Core subject
<b>PROFESSOR(S)</b>			<b>CONTACT DETAILS FOR TUTORSHIP (Postal address, phone number, e-mail, etc.)</b>		
<ul style="list-style-type: none"> <li>Lola Gámez Montalvo: Room office: 17, 5th floor ETSIE E-mail: <a href="mailto:mdgamez@ugr.es">mdgamez@ugr.es</a> T: 958 240046</li> <li>Joaquín Passolas Colmenero: Room office: 16, 5th floor ETSIE E-mail: <a href="mailto:passolas@ugr.es">passolas@ugr.es</a> T: 958 240045</li> </ul>			Department of Architectural Constructions. School of Building Engineering (ETSIE). Avda. Severo Ochoa s/n 18071, Granada (España) Professors' offices at the ETSIE. Institutional e-mail address of the faculty of UGR		
			<b>TIMETABLE OF TUTORSHIP</b>		
			It is difficult to express with clarity the timetable of tutorship in detail of the whole professorship and semester in this table, as well as the alterations that could happen during the course for unforeseen situations and the implementation of the replacement plan. The corresponding schedules could be consulted in the University website in <b>Identified Access &gt; Educational Arrangement</b> .		
<b>DEGREE WHICH IMPARTS IT</b>			<b>OTHER DEGREES IT CAN BE APPLIED TO</b>		
Degree in Building Engineering			Degree in Architecture. Degree in Civil Engineering. Degree in Fine Arts. Degree in History. Degree in Conservation and Restoration.		
<b>PREREQUISITES AND/OR RECOMMENDATION (if necessary)</b>					
This department recommends previous background in the fields of: <ul style="list-style-type: none"> <li>Drawing and Architectural graphic representation (At a pre-university course level).</li> <li>History of construction and basics of Cultural-Historical development (At a pre-university course level).</li> <li>Materials technology (At a pre-university course level).</li> <li>Materials elasticity and strength (At a pre-university course level).</li> </ul>					



## SHORT DESCRIPTION OF CONTENTS (ACCORDING TO THE REPORT OF DEGREE VERIFICATION)

Historical development of the building techniques. Types and styles in traditional and patrimonial building. Elements, basic techniques and systems in building construction processes. Function, compatibility and setting-up.

## GENERAL AND SPECIFIC COMPETENCES

### GENERAL COMPETENCES

#### INSTRUMENTAL:

- Capability of organization and planning.
- Solving problems.
- Making decisions.
- Oral and written communication in the native language.
- Capability of analysis and synthesis.
- Computer skills related to field of study.
- Ability to manage information.
- Knowledge of a foreign language.

#### PERSONAL:

- Team work.
- Ethical commitment.
- Critical thinking.
- Interpersonal relationship skills.
- Recognition of diversity and multiculturalism.

#### SYSTEMIC:

- Sensitivity to environmental issues.
- Motivation for quality.
- Adapting to new situations.
- Autonomous learning.
- Initiative and entrepreneurship.
- Leadership.
- Knowledge of other cultures and customs.
- Creativity.

#### GENERAL ACADEMIC SKILLS:

- Improvisation and adaptability to face new situations
- Positive attitude towards social and technological innovations
- Reasoning, discussion and exposition of own ideas
- Capability to communicate through words and images
- Study habits and work methodologies
- Ability to search, analyze and select information

### SPECIFIC COMPETENCES

- Awareness of the historic evolution of techniques and construction elements, as well as the structural systems which have led to different stylistic shapes and forms



- Knowledge of materials, construction systems used, different types and their physical and mechanical features
- Know how to adapt materials to different building types and uses
- Make distinction among multiple construction system in their features: Put-in-place, compatibility and function
- Bring up solutions for complex construction details
- Learn main general procedures in material execution

#### **GOALS (EXPRESSED AS EXPECTED RESULTS OF EDUCATION)**

As the main goal in this subject, the student must achieve a clearly defined base of all the construction process. That enables them to tackle more advanced subject in this degree. This implicates that they must know:

- The relation between basic concepts
- Learn the specific grammar and vocabulary of this field
- Apply the concepts learnt by carrying out practice exercises. The pupil is expected to give a satisfactory response including explanations of the solutions adopted.

After a satisfactory completion of all the subject contents, the student will have gained insight of how:

- Identifying construction elements and their components and their functionality
- Identify and differentiate construction types, composition, functionality and use and behaviour
- Historical development of construction procedures, techniques, methods and materials
- Establish distinction between multiple architectural forms throughout history
- Understand general and structural systems which led to those forms and shapes
- Proper knowledge of construction techniques (Theoretically and in practice). Compatibility with other systems and their development in time
- Adequate materials for each construction type and the set-in-place steps before completion
- Come up with ideas and solutions regarding construction details
- To gain complete overview of the existing construction systems. Identify the advantages and disadvantages of each system
- Know main monitoring procedures for material execution
- Integrate official regulations into every step in construction

#### **DETAILED LIST OF THE SUBJECT'S TOPICS**



## THEORY TOPICS:

### • UNITE I. INTRODUCTION AND BASIC CONCEPTS OF CONSTRUCTION PROCESS.

- TOPIC 0. Presentation, exposition of contents, standards and assessment criteria of the subject.
- TOPIC 1. Introduction to the construction.
  - Basic concept of the construction. Architectural construction.
  - Building construction: Development, typology and aspects to consider.
  - Requirements and regulatory framework in building construction.
    - Agents and technicians involved in the construction process.
    - Building and urban environment. Urban planning requirements.
    - Provisions and accessibility: Works of urbanization.
- TOPIC 2. Strength of materials and building elements.
  - Basic equilibrium equations.
  - Shear principles and stresses.
    - Normal and shear stress.
    - Bending and torsion moment.
    - Elastic instability: buckling.
  - Construction materials: general characteristics, their use and choice.
  - Basic conventional elements:
    - Walls: definitions, parts, types and classifications. Bonds.
    - Pillars and columns: definitions, parts, types and classifications. Classical order.
    - Arches, vaults and domes: definitions, parts, types and classifications.
    - Floors and roofs: definitions, parts, types and classifications.
  - Forces on a building structure.
- TOPIC 3. Site preparation.
  - Land as a support of buildings. Types.
    - Load performance. Requirements and regulations.
    - Ground recognition. Geotechnical study.
  - Earthworks. Land containment elements.
  - Plotting: concept, types and implementation.
- TOPIC 4. Foundations.
  - Basic concepts and types of foundations.
    - Interaction structure-foundation-ground.
    - Criteria and determinants for the election.
    - Mechanical performance and predimensioning of its elements.
  - Rules for design, plotting and construction.
- TOPIC 5. Structures.
  - Definitions and basic concepts.
  - Structural systems. Regulations.
  - Integral elements: definitions and properties.
    - Walls, arches and vaults.
    - Vertical frameworks.
    - Framed structure: supports and beams.



- Horizontal frameworks. Slabs.
  - Roof structures.
- Organization of the structure.
- Structure plans and details.
- Plotting and structure implementation.
- TOPIC 6. Stairs.
  - Definition. Function and nomenclature. Regulations.
  - Integral parts.
  - Typology and classification.
  - Stair plan. Compensation.
  - Safety elements.
  - Structure and connection with the building.
  - Plotting and stairs implementation.
- TOPIC 7. Involutes: Roofs and facades.
  - Definition. Functional requirements. Regulations.
  - Classification: Tiling and flat roofs.
  - Pitches and the layout of fields of roof.
  - Constituent elements: Supporting structure and covering materials.
  - Facades. Classification.
  - Space formation and closing.
  - Plotting and implementation.

## • UNITE II: HISTORICAL DEVELOPMENT OF CONSTRUCTION TECHNIQUES.

- TOPIC 8. Classical Architecture and its precedents.
  - Prehistoric construction.
    - Construction of mud, earth, branches, wood and stone.
  - Pre-classical construction: Mesopotamia, Egypt and Persia.
    - Materials and supporting and covering systems: vaulted and lintel systems.
  - Pre-Hellenic construction: Crete and Mycenae.
    - Cyclopean construction, vaulted covering and unloading triangle.
  - Greek construction:
    - Construction characteristics and typologies.
    - Materials, construction systems and work methods.
    - Order and proportion.
- TOPIC 9. Roman and medieval construction.
  - Roman construction.
    - Integration of precedent construction systems.
    - Technical innovations and construction systems.
  - Construction in Early Middle Ages: Byzantium and Islam
    - Materials and construction systems: foundations, brickwork, arches, vaults, slabs, roofs and covering.
    - Brick. Walls and mortars; arches and vaults of Roman tradition.
  - Hispano-Muslim Construction: types and construction characteristics.
  - Construction in Late Middle Ages.
    - Romanesque: Construction systems.



- Gothic: Technical innovations.
  - Mudejar: Materials (brick, wood and plaster). Stonework, roof reinforcement and covering.
- TOPIC 10. Construction in Modern period.
    - Renaissance: new advances and construction systems.
    - Renaissance in Spain: construction characteristics and the most distinguished examples.
      - Pre-scientific construction in the XVII and XVIII centuries. Academies.
      - Scientific revolution: Construction Science.
    - Baroque and neoclassic construction.
    - Construction after the scientific and industrial revolution.
      - Construction changes during the Scientific and Industrial Revolution.
      - Construction with traditional materials: stone, brick and wood.
      - Construction with new materials: iron, steel, concrete and glass.

## **PRACTICAL TOPICS:**

### **Seminars, expositions and conferences:**

During the course will take place seminars, expositions of students work or practices and conferences, during which will be discussed issues related to the subject. Topics to be discussed will vary depending on their validity or relevance and the availability and proposals made by guest speakers or students.

### **Practices:**

As a general objective of the proposed practices for the course, according to those already mentioned for this subject, students will get to know how to apply different abilities gained from the program, during the development of practical exercises, giving a satisfactory and well-reasoned answer to the adopted solutions.

Practices will be carried out throughout the course, parallel to the theory program development, through the solution of various exercises, which will be compulsory for all the students who have chosen the continuous assessment. These exercises will be of four types:

- a) Selective Exercises: Carried out individually by students, in case of failure, students will lose the right to a continuous assessment.
- b) Application Exercises: Carried out individually by students and solved by professors in parallel, during practice activities. There will be exercises on specific topics to apply the theory knowledge.
- c) Global exercises: Carried out in groups of 4-5 students, which will be duly set by teachers, with a wide deadline period for its implementation. These exercises will encompass multiple concepts and topics, to give an overview of the construction process.
- d) Monographic Exercises of free choice: Proposed by students and accepted by professors, to study in depth concrete concepts of the topic. These exercises have specific rules of implementation and will be voluntary. Obtained mark will increase the global assessment of students who have carried them out.

To carry out practices, there will be proposed some compulsory exercises (specifying if they are individual or group work exercises).

Practices will be carried out and presented mandatorily, according to the conditions of deadline and



presentation, duly indicated by the professor.

Students, who will not carry out practices during the course and don't meet the minimum requirements of attendance, can only be assessed by taking the final exam, on the date settled by this school. In the exams carried out during the course, may be proposed different test model for each student, depending on the work developed during the course. Prior to that date, will be published a list with a test model corresponding to each student.

- Practice 1. Construction terms. (Topic 1 and 2).
- Practice 2. Loads and Foundations. (Topic 2 and 4).
- Practice 3. Structures, stairs and roofs. (Topic 5, 6 and 7).
- Practice 4. Historical development of the construction techniques. (Topic 8, 9 and 10)

### **Field practices:**

Depending on the availability of students and professors, there will be guided tours proposed, that will allow students approach the world of construction and architecture. These practices should last about 3 hours, and will be carried out, out of the established timetable, being a voluntary act, not of an obligatory attendance. The aim for this course are the following tours:

- Guided tour 1: Discovering the heritage building.
- Guided tour 2: The city under construction.
- Guided tour 3: Immersion in the process of building.
- Guided tour 4: Monumental Granada: Alhambra and Cathedral.

### **BIBLIOGRAPHY**

#### **BASIC BIBLIOGRAPHY:**

- Diccionario visual de arquitectura; Ching, F.D.K.; Barcelona: GG, 2005.
- Como funciona un edificio; Allen, E.; Barcelona: GG, 2002.
- Estructuras: o por qué las cosas no se caen; Gordon, John E.; Madrid : Calamar, 2004.
- Historia de la construcción; Ortega Andrade, Francisco; Las Palmas : Universidad de Las Palmas de Gran Canaria , 1998.
- Historia de la construcción arquitectónica; Castro Villalba, Antonio; Barcelona : Universidad Politécnica de Cataluña , 2001.
- La construcción de la arquitectura; Paricio Ansuategui, Ignacio; Barcelona : Instituto de Tecnología de la Construcción de Cataluña, 2000.
- Claves del construir arquitectónico (3 tomos); González, J.L., Casals, A., Falcones, A.; Barcelona: GG, 2003.

#### **MANDATORY REGULATIONS:**

- Ley de ordenación de la edificación: Ley 38/1999 de 5 de noviembre.
- Código técnico de la edificación: Real Decreto 314/2006 de 17 de marzo.
- EHE-08 Instrucción de Hormigón Estructural: Real Decreto 1247/2008 de 18 de julio.
- Norma de construcción sismorresistente. Parte general y de edificación (NCSE-02): Real Decreto 997/2002 de 27 de septiembre.
- Normas para la accesibilidad en las infraestructuras, el urbanismo, la edificación y el transporte en Andalucía: Decreto 293/2009 de 7 de julio.



#### ADDITIONAL BIBLIOGRAPHY:

- Razón y ser de los tipos estructurales; Torroja, E.; Madrid: I.C.C. Eduardo Torroja, 1991.
- Principios de construcción; Reid, D.A.G.; Barcelona: GG, 1980.
- Cómo se construye una vivienda; Moia, J.L.; Barcelona: GG, 2004
- El muro de ladrillo; AAVV, Comisión técnica sección ladrillos cara vista de Hispalyt; Madrid: R.S. Centro Producción Publicidad, S.A., 1992.
- Estructuras de ladrillo; Fombella Guillen, R.; Madrid: U.N.E.D. Colección Escuela de la Edificación, 1988.
- Fábrica de bloques; Rodríguez Martín, L.F.; Madrid: U.N.E.D. Colección Escuela de la Edificación, 1991.
- Curso aplicado de cimentaciones; Rodríguez, J. M., Serra, J., Oteo, C.; Madrid: Colegio Oficial de Arquitectos de Madrid, 1982.
- Muros de contención y muros de sótano; Calavera Ruiz, J.; Madrid: INTEMAC, 2001.
- La estructura; Werner Roshental, H.; Barcelona: Blume, 1975.
- Escaleras. Diseño y construcción; Mannes, W.; Barcelona: G.G., 1987.
- Cubiertas; Owen, R.E.; Barcelona: Blume, 1978.
- Términos ilustrados de arquitectura, construcción y otras artes y oficios (2 tomos); Serra Hamilton, A.; Madrid: Colegio Oficial de Aparejadores y Arquitectos Técnicos de Madrid, 1991.
- Diccionario de Términos de Arte; Fatás, G. y Borrás, G.M.; Madrid: Alianza-Ediciones del Prado, 1993.
- Diccionario manual ilustrado de arquitectura; Ware, D. y Beatty, B.; Barcelona: GG, 1977.
- Vocabulario básico de arquitectura; Paniagua, J.R.; Madrid: Cátedra, 1982.
- Enciclopedia de la Construcción (tomos III y IV); Soto Hidalgo, J.; Madrid: [s.n.], 1960 (Instituto Geográfico y Catastral, Imp.).
- Introducción a la arquitectura; Benévolo, L.; Madrid: Hermann Blume, 1983.
- La construcción de la arquitectura, técnica, diseño y estilo; Foster, M. y otros; Madrid: H. Blume, 1988.
- Saber ver la arquitectura; Zevi, B.; Barcelona: Poseidón, 1991.
- Atlas de Arquitectura (2 vol.); Müller, W. y Vogel, G.; Madrid: Alianza Editorial, 1984 y 1986.

#### RECOMMENDED LINKS:

The information available in the computer networks is extremely broad and constantly changing. As a starting point for the students we indicate only some of the websites that can be consulted. During the development of each topic the most interesting and valuable pages will be discussed with more details

[www.arquitectura-técnica.com](http://www.arquitectura-técnica.com) (General Council of Technical Architecture in Spain)

[www.arquinex.es](http://www.arquinex.es) (Architecture Portal)

[www.csic.es/torroja](http://www.csic.es/torroja) (Eduardo Torroja Institute)

[www.itec.es](http://www.itec.es) (Foundation Catalonia Institute of Construction Technology)

[www.soloarquitectura.com](http://www.soloarquitectura.com) (Documents, legislation, publications, Software, etc.)

#### TEACHING METHODOLOGY

Given the multidisciplinary character required by the analysis of a building implementation process, the construction aspect becomes important enough to raise any type of methodology action that contributes to the training necessary to achieve the objectives.

Thus, the achievement of these objectives is carried out through the knowledge of formative contents, by teaching-learning interaction, which is carried out through different methods: lectures and practical





sessions, tutorship, additional academic activities. The methodology is based on the integration of theory with practice, learning focused on the case method, ongoing work of students in the classroom and coordinating and monitoring individual progress of each student by the teacher.

The program of practices aims to provide a consistent extension of the theoretical program and aims to contribute to progress in the learning process.

It is about obtaining the true knowledge of the subject and the profession, by contemplating the theory and practice as two inseparable parts.

In case of Construction I, the best way is to place student in real situations, to arise the choice of construction systems in specific buildings, forcing them to adopt solutions, which they will have to take in their future career.

Associated with specific lessons from the theory program, there will be proposed mentioned practices, always bearing in mind that they can be applied to some general aspects or carried out by following the explanations given during lectures.

All proposed activities are prepared to be carried out according to the theory lessons content and contribute to achieve proposed objectives.

#### **PROGRAMME OF ACTIVITIES**

The tutors for each group will provide in time a full breakdown of practices and activities which have to be completed during the course, according to the timetable assigned, the specific planning and the calendar for the current academic year

#### **ASSESSMENT (ASSESSMENT INSTRUMENTS AND CRITERIA, PORCENTAGE OF FINAL MARK, ETC.)**

Continuous assessment method applies to this subject by default, according to University of Granada regulations, although there are some exceptions (Please consult UGR norms for further information). The goals for the correct assessment in this subject are shown below:

**1.- CONTINUOUS ASSESSMENT:** A continuous assessment will be carried out throughout the course, so class attendance is mandatory to qualify for this type of evaluation, independently combining a minimum of 80% attendance, in both practical and theoretical lectures. It is also compulsory to submit all practice assignment (see annex b) within the deadline period. Each test or exercise will be assessed according to the level of achievement of stated objectives, for the purpose of final grade. Content and incidence of each of them, in the assessment process, follow these guidelines below:

- a. Two **individual tests**, to be carried out approximately on the following dates: Exercises 1: Covers Unit I. 10<sup>th</sup> week; Exercises 2: Covers Unit II. On the last week of the course. Final grade comes out of the arithmetic mean of these two tests. These exercises will focus on the theory and practical aspects presented during lectures (Each exam comprises each unit). Prior to carrying out the tests a list of students allowed to fulfill the task will be made public (see section b). Weight on the final course grade: **45%**.



- b. The third and fourth aspects assessed refer to the total completion of **practical exercises**. To be allowed to take the tests described in paragraph a, each student shall have completed and handed in, before the corresponding deadline, all of the proposed exercises.

CONSIDERATIONS:

- The students who for any circumstance, present the practical exercises out of time, they the qualification will be reduced in 1 point for week of delay.
  - Only the students who justify to have joined later to the qualifications, by means of voucher of the date of enrol in the matter (that they will have to deliver to the theory teacher of the group), will be able to deliver the practice 1 up to a maximum of 2 weeks after his incorporation without the above mentioned penalty.
  - The practices returned with the minor qualification to 35 % of the foreseen maximum, will have to be dedicated again in the not major space of 2 weeks after the return of the same ones.
  - To obtain the minimal qualification of 3.5, only the second correction will be accepted.
  - The practices with a qualification major or equal to 3.5, only will be able to increase this qualification by means of the final exhibition in class of the same ones
- Weight on the final course grade: **35%**.
- c. The fifth and sixth aspects consider, apply to the degree of participation of the students during classes and other activities will depend on different concepts that professor assesses during the course (test, questions, exercises, attendance, tutorship, seminars, etc.). This section is weighted with 10% at the least and pertains to attendance. A minimum percentage of 80% is mandatory in order to pass this part and gain the qualification of 5 right to undertake tests in section a. Weight on the final course grade: **20%**.
- d. The final qualification of the continuous assessment will be obtained having in consideration the previous qualifications, providing that none is lower than 35 % of the maximum attributed for each of them and having in his case that to approve the different parts of the subject of independent form.

The overcoming continued along the course will suppose not need to appear to final examinations. There will be respected the qualification of both blocks overcome of independent form for the ordinary summons of February, AS LONG AS, I KNOW FULFILL ALL THE PREVIOUS REQUIREMENTS, IN RELATION TO THE REGIME OF CONTINUOUS ASSESSMENT, in each of the blocks of independent form, therefore, the minimal qualifications of each one of the parts, they will never be lower than 35 % in each of them.

In the ordinary summons of February, the student will not be able to appear to the blocks of independent form, except those that have overcome anyone of these blocks during the continuous assessment and that will be informed about this circumstance by the teacher responsible for the course. In the extraordinary summons of July the student will examine of the whole subject, except that the teacher responsible for the group indicates the opposite to him.

**2.- ASSESSMENT BASED ON FINAL EXAM:** In the summons and dates fixed by the Direction of the Center and approved by School's Committee, will realize complete examinations of the subject. To the ORDINARY summons there will be able to appear the students who according to the regulation of evaluation and qualification meet in the circumstances that the same one establishes for it, as well as



the students who have not overcome the subject for continuous assessment but who fulfill the requirements that have been demanded for this form of evaluation, CONCRETELY, by ALL the dedicated practices and 80 % of the assistances. Considering the independence of both blocks. (To see continuous assessment).

In case of the EXTRAORDINARY summons there will be able to appear all those enrolled students who were not overcoming the subject by means of continuous assessment and the rest of students.

In accordance with of the current regulation, **the students who take refuge in the modality of examination in Assessment based on Final Exam** will have to accredit by means of the only exam that, they have acquired the totality of the competitions described in the educational guide of the subject. For which the exam will consist of the following parts and criteria of evaluation:

- Theoretical Part corresponding to the totality of the agenda of the subject differentiating block I and II.
  - Practical part, equivalent, as minimum, to the practices realized during the course of the block I and II.
- Every part they will have to pass themselves independently with a minimal qualification of 5 out of 10 in each one. This test will be able to be realized in more than one session and will be realized the same day in sessions in the morning and evening, obligatory both for students who have choose the assessment based on an Final Exam.

Grading criteria is based on the degree of achievement of the specific goals for each task and subsequently ranging in a scale from 0 to 10, except in cases that it have been established for the delivery of the practices out of the period.

Professors will carry out computerized monitoring and transform achieved levels into numerical scores according to its maximum possible value.

- Attendance (10%)
- Individual tests. Theory and practice-based (45 %)
- Practice exercise sessions during lectures (35%)
- Active involvement in lectures, seminar courses and practices (10%)

In any way, the making and spoken presentation of exercises and tasks completed by students will be assessed individually. The student is expected to prove transversal skills as management of information, ability to synthesize, logical and critical reasoning, and ordered transmission of information.

The student willing to pass the course under continuous assessment conditions must attend at least 80% both theoretical and practice activities.

#### CONSIDERATIONS OF INTEREST:

During the correction of exams, tests, practices and all kind of assignments, the following aspects will be taken into consideration:

1. Presentation, writing quality and spelling (All assignments)
2. Consistent and coherent responses. The pupil is expected to answer to questions neatly and concisely, making use, to that effect of diagrams, guidelines and any other useful addition resources the student might consider effective for a better understanding. Should the student refer to a non-asked aspect in the question-exercise, as to overfill the answer, it will be considered negative.
3. Practices and exercises carried out during lectures are aimed to award those students maintaining a high level



of attendance.

#### **ADDITIONAL INFORMATION**

At the beginning of every academic course, the teacher responsible for every group of the subject will publicize the particular conditions for the development of the teaching of the subject in every group.

The student will have to complete his information in the personal information of his/her access identified of the UGR and it will be INDISPENSABLE to complement them with his photography. **This one will have to be raised before it finishes the second week of class**, penalizing the student who does not fulfill the above mentioned indication.

For the correct follow-up of the subject and the facility of communication with the professorship it will be necessary to use the institutional mail of domain **correo.ugr.es**.

The platform of communication and interaction for the information will be the established one for the UGR to which one accedes with the UGR e-mail and the password of the same one.

