



| Teaching Guide      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| Identifying Data    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 2017/18   |
| Subject (*)         | Computer Science Preliminaries                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |        | Code                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 614G01002 |
| Study programme     | Grao en Enxeñaría Informática                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |
| Descriptors         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |
| Cycle               | Period                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Year   | Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Credits   |
| Graduate            | 1st four-month period                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | First  | FB                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 6         |
| Language            | SpanishGalicianEnglish                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |
| Teaching method     | Face-to-face                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |
| Prerequisites       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |
| Department          | ComputaciónEnxeñaría de Computadores                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |
| Coordinador         | Fariña Martinez, Antonio                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | E-mail | antonio.farina@udc.es                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |
| Lecturers           | Bernardo Roca, Guillermo de<br>Condori Fernández, Olinda Nelly<br>Cortiñas Álvarez, Alejandro<br>Fariña Martinez, Antonio<br>Fernández Blanco, Enrique<br>Fernández Lozano, Carlos<br>Gonzalez Lopez, Miguel<br>Iglesia Iglesias, Daniel Ismael<br>Ladra González, Susana<br>López Rodríguez, Juan Ramon<br>López Taboada, Guillermo<br>Losada Perez, Jose<br>Munteanu , Cristian Robert<br>Parama Gabia, Jose Ramon<br>Pazos Sierra, Alejandro<br>Rey Expósito, Roberto<br>Saavedra Places, María de los Angeles<br>Vazquez Araujo, Francisco Javier | E-mail | guillermo.debernardo@udc.es<br>n.condori.fernandez@udc.es<br>alejandro.cortinas@udc.es<br>antonio.farina@udc.es<br>enrique.fernandez@udc.es<br>carlos.fernandez@udc.es<br>miguel.gonzalez.lopez@udc.es<br>daniel.iglesia@udc.es<br>susana.ladra@udc.es<br>juan.ramon.lopez@udc.es<br>guillermo.lopez.taboada@udc.es<br>jose.losada@udc.es<br>c.munteanu@udc.es<br>jose.parama@udc.es<br>alejandro.pazos@udc.es<br>roberto.rey.exposito@udc.es<br>angeles.saavedra.places@udc.es<br>francisco.vazquez@udc.es |           |
| Web                 | moodle.udc.es                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |
| General description | This subject includes basic concepts about: computer hardware and information representation within computers, operating systems, databases, and communication networks.                                                                                                                                                                                                                                                                                                                                                                              |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |

| Study programme competences |                                                                                                                                                                                                             |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Code                        | Study programme competences                                                                                                                                                                                 |
| A4                          | Coñecementos básicos sobre o uso e a programación dos ordenadores, sistemas operativos, bases de datos e programas informáticos con aplicación na enxeñaría.                                                |
| A5                          | Coñecemento da estrutura, organización, funcionamento e interconexión dos sistemas informáticos, os fundamentos da súa programación e a súa aplicación para a resolución de problemas propios da enxeñaría. |
| B3                          | Capacidade de análise e síntese                                                                                                                                                                             |
| C2                          | Dominar a expresión e a comprensión de forma oral e escrita dun idioma estranxeiro.                                                                                                                         |
| C3                          | Utilizar as ferramentas básicas das tecnoloxías da información e as comunicacións (TIC) necesarias para o exercicio da súa profesión e para a aprendizaxe ao longo da súa vida.                             |
| C7                          | Asumir como profesional e cidadán a importancia da aprendizaxe ao longo da vida.                                                                                                                            |

| Learning outcomes                      |  |  |                             |
|----------------------------------------|--|--|-----------------------------|
| Learning outcomes                      |  |  | Study programme competences |
| Learn the basics of operating systems. |  |  | A4 B3                       |



|                                                                                                 |          |    |          |
|-------------------------------------------------------------------------------------------------|----------|----|----------|
| Understanding the basic operation of a computer, and how information is internally represented. | A4<br>A5 | B3 |          |
| Obtaining advanced user-level skills to install and manage a Linux-type operating system.       | A4<br>A5 |    | C2       |
| Obtaining advanced user-level skills to manage relational databases.                            | A4<br>A5 | B3 |          |
| Learn the basics of different programming paradigms.                                            | A4       |    |          |
| Learn the basics of communication networks.                                                     | A4<br>A5 | B3 | C2<br>C3 |
| Know the most important aspects of computer engineering profession.                             |          |    | C7       |

| Contents                                    |                                                                                                                                                                                                                                            |
|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Topic                                       | Sub-topic                                                                                                                                                                                                                                  |
| Fundamentals of Computer Architecture       | Information Representation<br>History of Computers Hardware<br>Computer Architecture                                                                                                                                                       |
| Fundamentals of Operating Systems           | Introduction<br>Operating System Structure<br>Services                                                                                                                                                                                     |
| Fundamentals of Database Management Systems | Introduction to Database Management Systems<br>Introduction to the Relational Model<br>Introduction to SQL                                                                                                                                 |
| Fundamentals of Communication Networks      | Networks: Introduction to Communication Networks.<br>Wiring and topologies.<br>The OSI model. Ethernet basics. Fundamentals of TCP / IP.<br>Configuration of end devices.<br>Basic functionality of network devices: Switches and Routers. |

| Planning                                                                                                                        |              |                      |                               |             |
|---------------------------------------------------------------------------------------------------------------------------------|--------------|----------------------|-------------------------------|-------------|
| Methodologies / tests                                                                                                           | Competencies | Ordinary class hours | Student's personal work hours | Total hours |
| Guest lecture / keynote speech                                                                                                  | A4 A5 B3 C7  | 30                   | 30                            | 60          |
| Laboratory practice                                                                                                             | A4 C2 C3     | 30                   | 48                            | 78          |
| Mixed objective/subjective test                                                                                                 | A4 A5 B3 C7  | 3                    | 0                             | 3           |
| Personalized attention                                                                                                          |              | 9                    | 0                             | 9           |
| (*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students. |              |                      |                               |             |

| Methodologies                   |                                                                                                                                                                                                         |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Methodologies                   | Description                                                                                                                                                                                             |
| Guest lecture / keynote speech  | Classroom lectures. In them the fundamental contents of the subject will be exposed. They include showing objectives, motivation, concept development, use, and summary.                                |
| Laboratory practice             | In laboratory classes the knowledge needed to acquire the proposed skills are presented. In the laboratory practices, students will do exercises that will lead them to develop their operative skills. |
| Mixed objective/subjective test | It consists in a final exam that will contain both questions related to theoretical issues and problems to solve.                                                                                       |

|                        |
|------------------------|
| Personalized attention |
|------------------------|



| Methodologies       | Description                                                                                                                                                                                                                           |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Laboratory practice | During the seminars, students may present problems, questions, etc. According to these requests, the professor will review concepts, solve new problems or use any other activities that could be helpful to solve the issues raised. |

| Assessment                      |              |                                                                                                                                                                                                                                                                                        |               |
|---------------------------------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Methodologies                   | Competencies | Description                                                                                                                                                                                                                                                                            | Qualification |
| Mixed objective/subjective test | A4 A5 B3 C7  | The final exam will evaluate the following concerns:<br>Theoretical Concepts regarding the subject: Mastering the theoretical and operational knowledge of the subject.<br>Practical expertise: Handling and Understanding of the operational and theoretical knowledge of the subject | 60            |
| Laboratory practice             | A4 C2 C3     | Students will have to do several practical exercises that will be rated.                                                                                                                                                                                                               | 40            |

| Assessment comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Students must obtain at least 40% of the maximum rate in the mixed test (final exam). Otherwise, they would not pass the subject even if the final rate (considering both practice and mixed test) were over 50%.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| First opportunity: Students who did not perform any (one or more) of the evaluable tests corresponding to the "laboratory practice" from September to January, (for example, those who did not attend the class on the day of the test), will receive a "zero" rate in the corresponding test. Yet, they are allowed to attend the final exam (Mixed objective/subjective test) and could still pass the subject in the first opportunity. Second opportunity: During the second opportunity it is possible to reach 100% of the maximum rate both in the practical test and in mixed test. Attention to part-time students: In case that: (a) they could not attend to the (scheduled) classes corresponding to their group and they miss any of the "practical tests" for this reason, and (b) provided that they notified that issue with time enough to re-schedule their test within a different group; we will try to allow them to join a different group so that they could do the corresponding "practical test" in a different date. |

| Sources of information |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Basic                  | <ul style="list-style-type: none"><li>- Ernesto Ariganello (2009). Reces Cisco. Guía de Estudio para la Certificación CCNA Routing y Switching. RA-MA</li><li>- Vicente Trigo Aranda (2010). Del ábaco a Internet. Creaciones Copyright</li><li>- A. Silberschatz; H. Korth; S. Sudarshan (2006). Fundamentos de Bases de Datos. Mc Graw Hill</li><li>- A. Silberschatz; H. Korth; S. Sudarshan (2011). Database System Concepts (6th ed). McGraw-Hill</li><li>- Elmasri, R.; Navathe, S. (2007). Fundamentos de Sistemas de Bases de Datos. Addison-Wesley</li><li>- Miles J. Murdocca; Vincent P. Heuring (2002). Principios de arquitectura de computadoras. Prentice-Hall</li><li>- Allen B. Tucker, Robert E. Noonan (2001). Programming Languages: Principles and Paradigms. Mc Graw Hill</li><li>- Carretero et al. (2007). Sistemas Operativos, una visión aplicada (2ª ed). Mc Graw Hill</li><li>- Andrew S. Tanenbaum (2009). Sistemas Operativos Modernos (3ª ed). Prentice-Hall</li><li>- Andrew S. Tanenbaum (2009). Modern Operating Systems (3rd ed). Pearson-Prentice Hall</li><li>- Wendell Odom (2013). CCENT/CCNA ICND1 100-101 Official Cert Guide. Cisco Press</li></ul> |
| Complementary          | <ul style="list-style-type: none"><li>- W. Stallings (2004). Comunicaciones y Redes de Computadores. Pearson - Prentice Hall</li><li>- Silberschatz, A.; Galvin, P.B.; Gagne, G. (2005). Fundamentos de los Sistemas Operativos (7ª ed). Mc Graw Hill</li><li>- M. Meyers (2009). Redes. Administración y mantenimiento. Anaya</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

| Recommendations                                          |
|----------------------------------------------------------|
| Subjects that it is recommended to have taken before     |
| Subjects that are recommended to be taken simultaneously |
| Subjects that continue the syllabus                      |



Fundamentals of Computers/614G01007

Computer Structure/614G01012

Databases/614G01013

Operating Systems/614G01016

Networks/614G01017

Other comments

(\*)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.