



## Teaching Guide

| Teaching Guide      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |        |                       |           |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----------------------|-----------|
| Identifying Data    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |        |                       | 2020/21   |
| Subject (*)         | Development Tools                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |        | Code                  | 614G01054 |
| Study programme     | Grao en Enxeñaría Informática                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |        |                       |           |
| Descriptors         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |        |                       |           |
| Cycle               | Period                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Year   | Type                  | Credits   |
| Graduate            | 1st four-month period                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Fourth | Optional              | 6         |
| Language            | SpanishGalicianEnglish                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |        |                       |           |
| Teaching method     | Hybrid                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |        |                       |           |
| Prerequisites       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |        |                       |           |
| Department          | Ciencias da Computación e Tecnoloxías da InformaciónComputación                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |        |                       |           |
| Coordinador         | Parapar López, Javier                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | E-mail | javier.parapar@udc.es |           |
| Lecturers           | Landín Piñeiro, Alfonso                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | E-mail | alfonso.landin@udc.es |           |
|                     | Parapar López, Javier                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |        | javier.parapar@udc.es |           |
| Web                 | http://www.dc.fi.udc.es/~parapar/                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |        |                       |           |
| General description | <p>In this subject we will explain the conceptual and practical foundations regarding tools for the development of projects software. In particular we will explain the following tools, his advantages and his correct use from a point of view of Software Engineering:</p> <p>Integrated Development Enviroments: Eclipse</p> <p>Tools for automation of packing: Maven</p> <p>Tools for control of versions and cooperative work : Git</p> <p>Tools for continue integration : Apache Jenckins</p> <p>Tools for task/time/bug tracking: Redmine</p> <p>Tools for analysis of code and dependencies: Codepro Analytix, Sonar</p> <p>Tools for analysis of performance and monitoring: JStat, JConsole, JVisualVM</p> <p>The subject is very practical and tries to contribute to the student deep knowledge on the tools of development more used nowadays in IT companies.</p> |        |                       |           |
| Contingency plan    | <p>1. Modificacións nos contidos</p> <p>-No se contemplan modificación de los contenidos</p> <p>2. Metodoloxías</p> <p>-No se contemplan modificaciones de metodoloxías, solo</p> <p>3. Mecanismos de atención personalizada ao alumnado</p> <p>-Las tutorías serán online en cualquier caso</p> <p>4. Modificacións na avaliación</p> <p>-No se contemplan modicaciones en las formas de evaluar, solo cambiará el formato que podrá ser presencial u online según la situación</p> <p>5. Modificacións da bibliografía ou webgrafía:</p> <p>-No se contemplan</p>                                                                                                                                                                                                                                                                                                                |        |                       |           |

## Study programme competences

| Code | Study programme competences                                                                                                                                                                                                                                                                                                  |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A22  | Coñecemento e aplicación dos principios, metodoloxías e ciclos de vida da enxeñaría do sóftware.                                                                                                                                                                                                                             |
| A25  | Capacidade para desenvolver, manter e avaliar servizos e sistemas sóftware que satisfagan todos os requisitos do usuario e se comporten de forma fiable e eficiente, sexan accesibles de desenvolver e manter, e cumpran normas de calidade, aplicando as teorías, principios, métodos e prácticas da enxeñaría do sóftware. |
| B1   | Capacidade de resolución de problemas                                                                                                                                                                                                                                                                                        |
| B2   | Traballo en equipo                                                                                                                                                                                                                                                                                                           |
| B3   | Capacidade de análise e síntese                                                                                                                                                                                                                                                                                              |



|    |                                                                                                                                                                                 |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| B4 | Capacidade para organizar e planificar                                                                                                                                          |
| 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. |
| C6 | Valorar criticamente o coñecemento, a tecnoloxía e a información dispoñible para resolver os problemas cos que deben enfrontarse.                                               |
| C7 | Asumir como profesional e cidadán a importancia da aprendizaxe ao longo da vida.                                                                                                |

| Learning outcomes                                                                              |  |                             |                |
|------------------------------------------------------------------------------------------------|--|-----------------------------|----------------|
| Learning outcomes                                                                              |  | Study programme competences |                |
| Software Development                                                                           |  | A25                         | B2<br>B3<br>B4 |
| Software Development                                                                           |  | A22                         | B1             |
| Conocer e manexar as principais contornas de desenvolvemento                                   |  |                             | C6             |
| Aprender o manexo de ferramentas de control de versións e de mantemento software               |  | A25                         | B1<br>B3       |
| Conocer ferramentas para a xestión de proxectos e seguemento de incidencias                    |  | A25                         | C3<br>C6<br>C7 |
| Usar ferramentas de apoio ao despregamento, empaquetado, versionado e distribución do software |  | A25                         | B4             |
| Usar ferramentas de inspección de código                                                       |  |                             | B2             |
| Usar ferramentas de análises de rendemento e monitorización de aplicacións                     |  | A25                         | C3<br>C7       |

| Contents                                         |                                    |
|--------------------------------------------------|------------------------------------|
| Topic                                            | Sub-topic                          |
| Integrated Development Enviroments               | Eclipse                            |
| Tools for packing automation                     | Maven                              |
| Tools for version control and cooperative work   | Git                                |
| Tools for continue integration                   | Jenkins                            |
| Tools for task/time/bug tracking                 | Redmine                            |
| Tools for analysis of code and dependencies      | Sonar                              |
| Tools for analysis of performance and monitoring | jMeter, JStat, JConsole, JVisualVM |

| Planning                        |                  |                      |                               |             |
|---------------------------------|------------------|----------------------|-------------------------------|-------------|
| Methodologies / tests           | Competencies     | Ordinary class hours | Student?s personal work hours | Total hours |
| Supervised projects             | B2 B3 B4 C6 C7   | 7                    | 21                            | 28          |
| Laboratory practice             | A22 A25 B1 C3    | 14                   | 42                            | 56          |
| Mixed objective/subjective test | A22 A25 B1 B3 C6 | 0.5                  | 0                             | 0.5         |
| Guest lecture / keynote speech  | B4 C6 C7         | 18                   | 47.5                          | 65.5        |
| Personalized attention          |                  | 0                    |                               | 0           |

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

| Methodologies       |                                                                                                                                                                                                    |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Methodologies       | Description                                                                                                                                                                                        |
| Supervised projects | Traballos tutelados propostos polo profesor e desenvolvidos polos estudantes ou ben en grupo ou ben individualmente.                                                                               |
| Laboratory practice | Ao tratarse dunha materia eminentemente práctica o desenvolvemento por parte do alumno dun caso de práctica para o uso de todas as ferramentas comentadas nas leccións maxistrais será fundamental |



|                                 |                                                                                                                                                                                                         |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mixed objective/subjective test | Avaliarase o dominio dos coñecementos teóricos e operativos da materia.                                                                                                                                 |
| Guest lecture / keynote speech  | Clases maxistras na exposición dos coñecementos teóricos utilizando diferentes recursos: a lousa, transparencias, proxeccións, demostracións e a facultade virtual. Pode incluír conferencia convidada. |

## Personalized attention

| Methodologies       | Description                                                                                                                                                                                       |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Supervised projects | Se propondran pequenos traballos tutelados para a resolución por parte do alumno co soporte do coñecemento do profesor.                                                                           |
| Laboratory practice | Ao tratarse dunha materia eminentemente práctica o desenvolvemento por parte do alumno dun caso de práctica para o uso de todas as ferramentas comentadas nas leccións maxistras será fundamental |

## Assessment

| Methodologies                   | Competencies     | Description                                                                                                                                                                                                                    | Qualification |
|---------------------------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Mixed objective/subjective test | A22 A25 B1 B3 C6 | Questions about the acquired knowledge. Questions involving critical reasoning for solving practical problems of the real world. It is mandatory to achieve at least the 40% of the marks in order to pass the course          | 40            |
| Supervised projects             | B2 B3 B4 C6 C7   | Tracking of the working process and evaluation of the final output from the students. It is mandatory to achieve at least the 40% of the marks in order to pass the course                                                     | 20            |
| Laboratory practice             | A22 A25 B1 C3    | Correctness and completeness of the assignments proposed to the students while adequately using the dev tools introduced in the subjects. It is mandatory to achieve at least the 40% of the marks in order to pass the course | 40            |

## Assessment comments

Para a segunda oportunidade e as convocatorias non ordinarias, tanto as prácticas e traballos como a teorías avaliaranse no exame mixto.  
Se non se acada a nota mínima nas distintas probas a nota máxima do alumno será 4.5

## Sources of information

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Basic</b>         | <ul style="list-style-type: none"> <li>- G. Ann Campbell, Patroklos P. Papapetrou (). Sonar in Action. Manning Publications</li> <li>- Andriy Lesyuk (). Mastering Redmine. Packt Publishing</li> <li>- Alan Berg (). Jenkins Continuous Integration Cookbook,. Packt Publishing</li> <li>- Jon Loeliger &amp; Matthew McCullough (). Version Control with Git: Powerful tools and techniques for collaborative software development. O'Reilly</li> <li>- Sonatype Company (). Maven: The Definitive Guide. O'Reilly</li> <li>- John Ferguson Smart (). Jenkins: The Definitive Guide. O'Reilly</li> </ul> |
| <b>Complementary</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

## Recommendations

### Subjects that it is recommended to have taken before

Internet and Distributed Systems/614G01023  
Advanced Programming/614G01030

### Subjects that are recommended to be taken simultaneously

Development Methodologies/614G01051  
Software Verification and Validation/614G01225

### Subjects that continue the syllabus

## 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.