



Teaching Guide				
Identifying Data				2023/24
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			
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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            Tools for automation of packing: Maven            Tools for control of versions and cooperative work : Git            Tools for continue integration : Apache Jenckins            Tools for task/time/bug tracking: Redmine            Tools for analysis of code and dependencies: Codepro Analytix, Sonar            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>			

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 B3 B4	C3



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 B3	C6
Conocer ferramentas para a xestión de proxectos e seguemento de incidencias	A25		C3 C6 C7
Usar ferramentas de apoio ao despregamento, empaquetado, versionado e distribución do software	A25	B4	C3
Usar ferramentas de inspección de código		B2	
Usar ferramentas de análises de rendemento e monitorización de aplicacións	A25		C3 C7

Contents	
Topic	Sub-topic
Integrated Development Enviroments	Eclipse
Tools for version control and cooperative work	Git
Tools for task/time/bug tracking	Redmine
Tools for packing automation	Maven
Tools for continuous integration and deployment	Jenkins, Kubernetes
Tools for continous inspection	SonarQube
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 maxistras 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	The individual work of the students will be evaluated.
Laboratory practice	Values of equality will be promoted following current recommendations.



## 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

For the second opportunity and the non-ordinary calls, both the practices and work as well as theories will be evaluated in the mixed exam. If the minimum grade is not reached in the different tests, the maximum grade of the student will be 4.5

- The fraudulent performance of tests or evaluation activities, once verified, will directly imply the qualification of fail in the call in which it is committed: the student will be graded with "suspense" (numerical note 0) in the corresponding call of the academic year, whether the commission of the foul occurs on the first opportunity or on the second. To do this, his rating will be modified in the first opportunity report, if necessary.

## 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.