

<b>Program</b>	<b>09TT- Engineering in Telecommunication Technologies and Services</b>
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<b>Course number and name</b>	
<b>Number</b>	95000024
<b>Name</b>	Software analysis and design Análisis y diseño de software
<b>Semester</b>	Y2/S4

<b>Credits and contact hours</b>	
<b>ECTS Credits</b>	4.5
<b>Contact hours</b>	49

<b>Coordinator's name</b>	Juan Antonio de la Puente
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<b>Specific course information</b>		
<b>Description of course content</b>		
Second course on programming, aiming at progressing in mastering concepts, methods, and tools for developing telecommunication-oriented software applications.		
<b>List of topics to be covered</b>		
Review of programming basics, debugging and testing. Algorithms. Recursive algorithms and complexity. Application to dictionaries and searching. Concurrent programming. Threads. Global variables and monitors. Deadlocks. Interfaces and mobile applications. Event-based programming.		
<b>Prerequisites or co-requisites</b>		
Basic knowledge of computer structure and communications . Basic programming skills in a high-level language.		
<b>Course category in the program</b>		
<input checked="" type="checkbox"/> <b>R (required)</b>	<input type="checkbox"/> <b>E (elective)</b>	<input type="checkbox"/> <b>SE (selective elective)</b>

<b>Specific goals for the course</b>	
<b>Specific outcomes of instruction</b>	
RA171: To be able to use a programming environment to write, document, test, package, and deploy software applications	
RA172 – To know the basic principles of algorithm analysis and design, and how to apply them to representative algorithms.	
RA173 - To know the basic principles of algorithm complexity analysis, and apply them to representative algorithms.	
RA174 – To know the basic concepts of concurrent programming, and the fundamental synchronization mechanisms.	
RA175 – To know and understand the main problems that may arise in concurrent	

<p>programs, and the basic strategies to overcome them.</p> <p>RA176 – To know a software development process for telematic applications.</p> <p>RA177 – To know a representative architecture for telematic applications.</p> <p>RA178 – To know, understand, and apply design patterns in the software development process.</p> <p>RA179 – To know, understand, and apply basic techniques for developing graphic applications.</p>
<p><b>Student outcomes addressed by the course</b></p>
<p>CECT1, CECT2, CECT7, CG2, CG9</p>

<p><b>Bibliography and supplemental materials</b></p>
<p>K. Sierra, Head first Java</p> <p>M.A. Weiss, Data structures &amp; Problem Solving using Java</p> <p>Wong, Java Threads</p> <p>M. Gargenta, Learning Android</p> <p>Course slides, examples , code, and other documents on teaching platform (moodle).</p>

<p><b>Teaching methodology</b></p>			
<p><b>15 lectures</b> (25 h)</p>	<p><b>10 problem solving sessions</b> (10 h)</p>	<p><b>— collaborative actions</b></p>	<p><b>5 laboratory sessions</b> (10 h)</p>
<p><b>Other:</b></p>	<p>PBL: a game application is used throughout the course to motivate the need for using advanced programming concepts and methods.</p>		