

<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>	95000029
<b>Name</b>	Circuit Analysis and Design Análisis y Diseño de Circuitos
<b>Semester</b>	Y2-S4

<b>Credits and contact hours</b>	
<b>ECTS Credits</b>	3
<b>Contact hours</b>	30

<b>Coordinator's name</b>	Ramón Martínez Rodríguez-Osorio
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<b>Specific course information</b>		
<b>Description of course content</b>		
<p>This course covers the circuit analysis using Laplace transform, and the use of two-port network concepts for circuit analysis. The course presents the characterization of electric circuits in frequency and time domain, showing the relation between stability, location of poles and zeroes, and the frequency response. Circuit synthesis is covered in the final part of the course, including the design of passive and active filters.</p>		
<b>List of topics to be covered</b>		
<ol style="list-style-type: none"> <li>1. Circuit analysis using Laplace Transform</li> <li>2. Two-port networks</li> <li>3. Temporal and frequency response of electric circuits</li> <li>4. Introduction to filter design</li> </ol>		
<b>Prerequisites or co-requisites</b>		
None, but it will be assumed that students have knowledge of basic circuit analysis and linear systems		
<b>Course category in the program</b>		
<input checked="" type="checkbox"/> R (required)	<input type="checkbox"/> E (elective)	<input type="checkbox"/> SE (selective elective)

<b>Specific goals for the course</b>	
<b>Specific outcomes of instruction</b>	
<p>RA1: To learn to use Laplace Transform for circuit analysis including initial conditions                  RA2: To know the theory of two-port networks and its application to circuit analysis                  RA3: To learn methodologies for filter analysis and characterization</p>	

RA4: To know the basic use of computer aided tools for circuit analysis  
 RA5: To know the foundations of filter design methods

**Student outcomes addressed by the course**

CETC1, CETC2, CETC3, CETC4, CECT5  
 CG5

**Bibliography and supplemental materials**

- Análisis y Diseño de Circuitos. José L. Sanz y Diego Andina. Dpto. Publicaciones ETSI de Telecomunicación, Madrid, 1997.
- Linear Circuit Analysis, Vol. II. Raymond A. DeCarlo and Pen-Min-Lin. Prentice-Hall. Englewood Cliffs, NJ, 1995.
- Electric Circuits. 5th Ed. James W. Nilsson, Susan Riedel. Prentice Hall, 1996.
- Applied Circuit Analysis. Shlomo Karni. John Wiley&Sons, 1988.
- Análisis de Redes M. E. Van Valkenburg. Limusa, 1977.
- Analog Filter Design M. E. Van Valkenburg. Holt-Rinehart & Winston, NY, 1982.
- Introduction to Circuits Synthesis and Design G.C. Temes and J.W. LaPatra. McGraw-Hill, NY, 1977.
- Website: <http://moodle.upm.es/titulaciones/oficiales>

**Teaching methodology**

<input checked="" type="checkbox"/> lectures	<input checked="" type="checkbox"/> problem solving sessions	<input type="checkbox"/> collaborative actions	<input checked="" type="checkbox"/> laboratory sessions
<b>Other:</b>			