

<b>Degree class:</b> Information Engineering		<b>First level (three years) degree:</b> Electronics and Telecommunication Engineering		<b>Academic year:</b> 2014 - 2015	
<b>Type of course</b> Characterizing	<b>Disciplinary area:</b> Telecommunication Engineering	<b>Scientific Discipline Sector:</b> Telecommunications (ING-INF/01)		<b>ECTS Credits:</b> 6	
<b>Title of the course:</b> <b>Introduction to Random Processes</b>	<b>Code:</b> 2160	<b>Type of course:</b> Mandatory. First Module of course "Electrical Communications"		<b>Year:</b> second	<b>Semester:</b> first
<b>LECTURER:</b> Prof. Gennaro Boggia (Associate Professor)					
<b>HOURS OF INSTRUCTION:</b> 40 hours of theory (5 ECTS), 16 hours of examples (1 ECTS).					
<b>PREREQUISITES:</b> Background on mathematical analysis and physics.					
<b>AIMS:</b> Basic knowledge about signal theory. The module provides the basic analytical tools for information processing, with particular reference to transmission systems.					
<b>CONTENTS:</b> <ul style="list-style-type: none"> <li>- Basic signals</li> <li>- Fourier series and transforms</li> <li>- Time-invariant linear systems</li> <li>- Basic concepts on probability theory</li> <li>- Continuous and discrete random variables</li> <li>- Stochastic processes</li> <li>- Spectral analysis of stochastic processes</li> <li>- Basic principles of signal transmissions: sample theorem and quantization</li> <li>- Basic concepts on information theory and Shannon theorem</li> </ul>					
<b>TEACHING METHODS:</b> Lecture notes Other information available at <a href="http://telematics.poliba.it/random">http://telematics.poliba.it/random</a>					
<b>EXPECTED OUTCOME AND SKILLS:</b> Knowledge about analytical tools for information processing. Skills in: calculus with Fourier transforms; usage of spectral analysis of signals; random variables; definition of fundamental parameters of a stochastic processes; comprehension of basic aspects of a transmission system					
<b>TEACHING AIDS:</b> Computer slides. Other information available at <a href="http://telematics.poliba.it/random">http://telematics.poliba.it/random</a>					
<b>EXAMINATION METHOD:</b> Oral examination.					
<b>BIBLIOGRAPHY:</b> M. Luise, G. M. Vitetta, Teoria dei Segnali, Terza edizione, Mc-Graw Hill, 2009. (in Italian)					
<b>FURTHER BIBLIOGRAPHY:</b> <ol style="list-style-type: none"> <li>1) A. Papoulis, S. U. Pillai, Probability, Random Variables, and Stochastic Processes, IV ed., McGraw-Hill, 2002.</li> <li>2) S. Ross, Introduction to Probability Models, Academic Press, 2010.</li> </ol>					
<b>FURTHER INFORMATIONS:</b> Department of Electrical and Information Engineering (DEI), Politecnico di Bari ( <a href="http://dei.poliba.it">http://dei.poliba.it</a> ), Via Orabona 4, 70125, Bari, Italy. Lecturer room at 2th floor, DEI. E-mail: <a href="mailto:g.boggia@poliba.it">g.boggia@poliba.it</a> ; Ph.: +39 080 5963913.					