

## Estudios de Ingeniería en Informática

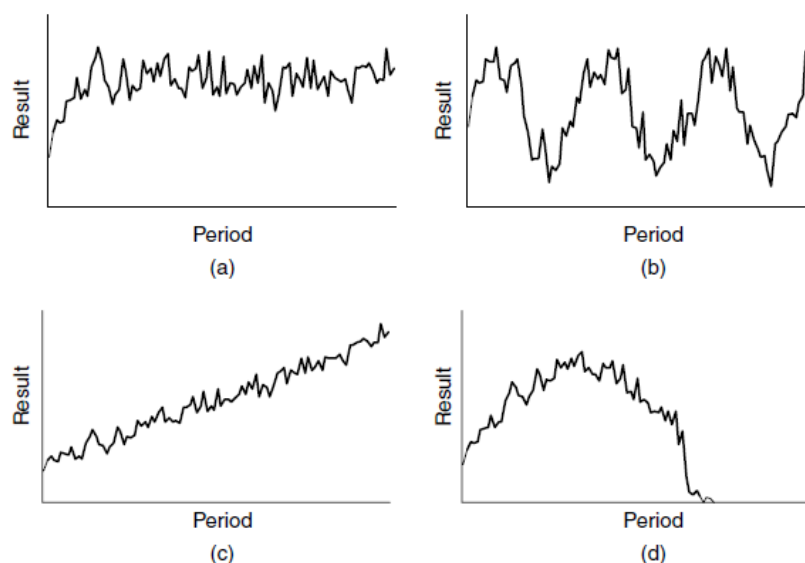
<b>SUBJECT:</b>	<b>SIMULACIÓN (M1.205)</b>		
<b>PAC Num.:</b>	<b>2</b>		
<b>Date of proposal:</b>	<b>31/03/2018</b>	<b>Date of delivery:</b>	<b>≤ 30/04/2018</b>
<b>Observations:</b>	<ul style="list-style-type: none"><li>• The answers will be on this document, keep the original text and take care on the final <b>presentation</b>.</li><li>• It is needed to <b>justify</b> all the answers.</li><li>• The name of the file must be <b>Surname1_Surname2_Name.RTF</b> (o .DOCX o .PDF)</li></ul>		
<b>Evaluation:</b>	All the exercises indicates its weight.		

### EXERCICES

In this second PAC we are working with the chapters 7-13 of Robinson Book. Follow the “Simulation” guide.

**Q1 - 15%) (Chapter 7)** Use the Distributions.xls spreadsheet (see the website [www.wileyeurope.com/go/robinson](http://www.wileyeurope.com/go/robinson)) to investigate the effect of changing distribution parameters on the shape, mean and standard deviation of the following distributions: Normal, binomial, gamma and poisson. Drawn the distributions graphically and describe the main effects of changing the parameters.

**Q2 - 15%) (Chapter 9).** The time-series graphs below show typical simulation output. For each graph identify the type of model (terminating or non-terminating) and the nature of the simulation output (transient, steady-state, steady-state cycle).



**Q2 - 25%) (Chapter 10).** Section 10.5 describes various formal approaches to search experimentation (experimental design, metamodeling and optimization). Carry out some further research into one of these areas, identifying the key methods for aiding

**simulation experimentation. (Hint: use the references in Section 10.5 as a starting point for your research.)**

**Q3 - 15%) (Chapter 12). Carry out some verification and validation tests with the model of the bank model developed from the case described Exercise E6.1 (Chapter 6):**

*A bank is planning its requirements for ATMs (automated teller machines) in a new branch. There are spaces for up to six ATMs, not all of which have to be used. Three types of ATM can be purchased: general ATMs (giving cash, balances, mini statements and PIN change facilities), ATMs for paying money into accounts and ATMs that provide full account statements. The bank has a policy that customers should not wait more than 5 minutes in the majority of cases (generally interpreted as 99%)*

**Q4 - 30%) Develop a computer model for the bank case described in Exercise E6.1 (Chapter 6). First devise the model structure and then develop the model code in the software of your choice. Set up the data so that the mean arrival rate is about 80% of the mean service rate (for the purposes of calculating this percentage both rates should be aggregated across all customer types and service points).**