



Universidad de
La Sabana

SUBJECT SYLLABUS

ACADEMIC OVERVIEW INTERNATIONAL SCHOOL OF ECONOMIC & ADMINISTRATIVE SCIENCES

SUBJECT NAME AND CODE: PROGRAMMING FOR ECONOMISTS (4329PREC)

LEVEL OF STUDY: Undergraduate Program

GENERAL ACADEMIC INFORMATION	
LATEST UPDATE	2018-1
ACADEMIC AREA	Economy
SUBJECT TYPE	Elective
CREDIT POINTS	3
CLASSROOM HOURS PER WEEK	3
PRE-REQUISITES	Linear algebra
LANGUAGE	English
INTERNATIONAL CONTENT	<ul style="list-style-type: none">• Reading materials in English• International bibliography is used
COURSE DETAILS	
COURSE DESCRIPTION	The main objective of the course is that the student learns the basics of programming and data analysis using the statistical software R. We will discuss general concepts about programming, including syntax basics. Some of the topics that the course will cover are loading data, use of functions, debugging, and ways to order and comment scripts in R. Some practical examples of statistical analysis, matrix algebra and optimization theory are used to give examples.
COMPETENCES DEVELOPED	<p>C1 – Understanding the basic object classes in R, how to load datasets in the software and the use of different control structures including the use of loops and user programmed functions. (Énfasis: Conocimiento, ILO: ILO 02, EFI ILO06)</p> <p>C2 – Learn how to use debugging tools that are included in R, the use of tools to develop efficient codes and the basics of object oriented programming in this software. (Énfasis: Conocimiento, ILO: ILO 02, EFI ILO06)</p>

	<p>C3 - Solve practical problems and exercises given in class using algorithmic thinking and computational concepts. (Énfasis: Habilidad / Actitud, ILO: ILO 02, EFI ILO06, EFI ILO07)</p>
<p>COURSE CONTENTS</p>	<p>The exposition and analysis of fundamental aspects of each topic regarding the proposed lectures will be given on classes. However, students should read the lectures in advance to ease the exposition in the class.</p> <p>To reach the objectives and to develop the expected abilities, an active participation in class is a must. In particular, the following items are important:</p> <ul style="list-style-type: none"> • Reading lectures proposed in the syllabus before the respective week. • Deliver all homework's proposed by the teacher.
<p>ASSESSMENT</p>	<p>The final grade will be a weighted average of the following aspects: First exam 25% Midterm 25% Final exam 25% Homework 25%</p> <p>The first exam covers the topics of the first part of the course. The midterm covers the contents of the second part of the course. The final exam covers the final part of the course. The homework grade is a weighted average of the assignments, class exercises and quizzes carried out during the academic period.</p> <p>As part of the evaluation process, the following will be considered:</p> <ul style="list-style-type: none"> • Written exam. The teacher can use methods in the exam such as: Problem based analysis and study cases. Competences developed: C1, C2, C3, • Assignments: The teacher can use methods such as: collaborative learning, Problem based analysis and study cases. Competences develop: C1, C2, C3 <p>To present a quiz or an assignment in a date different from those given by the teacher, the student should give a valid excuse. The latter refers to a medical excuse or a domestic calamity. In all cases, the student should have a physical support of the excuse.</p> <p>Grade complaints (of homework's or anything else) can only be made between the next eight working days following the delivery of the grade to the student. After this period, I will not accept any complain. On the other hand, complains regarding the grade of an exam should be made the same day in which the exam is given to</p>

	<p>the student, all students should assist to class this day.</p> <p>Students who can't present an exam have the right to an exam extension that will be made the week following the original date of the exam. This extension will be made only if the student has a permission given by the Academic success coordination.</p>																																	
WEEKLY PLAN	<table border="1"> <thead> <tr> <th>WEEK</th> <th>TOPIC</th> <th>LECTURES</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>R introduction, use of packages and help</td> <td>Chapter 1,Appendix A, B [MN] Chapter 2 [GG]</td> </tr> <tr> <td>2-4</td> <td>Objects in R: Selecting them and modifying their values</td> <td>Chapter 3-4-5 [GG]</td> </tr> <tr> <td>5</td> <td>Environments in R, Loading data</td> <td>Chapter 6 [GG] Chapter 1 [CW]</td> </tr> <tr> <td colspan="3" style="text-align: center;">Exam I</td> </tr> <tr> <td>6-7</td> <td>R scripts and loops</td> <td>Chapter 7,9 [GG]</td> </tr> <tr> <td>8-9</td> <td>Debugging and functions</td> <td>Chapter 13 [MN]</td> </tr> <tr> <td>10-12</td> <td>Object oriented programming in R</td> <td>Chapter 8 [GG]</td> </tr> <tr> <td colspan="3" style="text-align: center;">Midterm</td> </tr> <tr> <td>13-16</td> <td>Graphs in R</td> <td>Chapter 2-5 [CW]</td> </tr> <tr> <td colspan="3" style="text-align: center;">Final Exam</td> </tr> </tbody> </table>	WEEK	TOPIC	LECTURES	1	R introduction, use of packages and help	Chapter 1,Appendix A, B [MN] Chapter 2 [GG]	2-4	Objects in R: Selecting them and modifying their values	Chapter 3-4-5 [GG]	5	Environments in R, Loading data	Chapter 6 [GG] Chapter 1 [CW]	Exam I			6-7	R scripts and loops	Chapter 7,9 [GG]	8-9	Debugging and functions	Chapter 13 [MN]	10-12	Object oriented programming in R	Chapter 8 [GG]	Midterm			13-16	Graphs in R	Chapter 2-5 [CW]	Final Exam		
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BIBLIOGRAPHY	<p>[KR] Kabacoff, R. (2011) R in Action: Data Analysis and Graphics with R, 1st edition, Manning Publications.</p> <p>[WC] Chang, W. (2013) Graphics Cookbook Practical Recipes for Visualizing Data, 1st edition, O'Reilly Media.</p> <p>[MN] Matloff, N. (2011) The Art of R Programming A Tour of Statistical Software Design, 1st edition, No Starch Press.</p> <p>[GG] Grolemond, G. (2014) Hands-On Programming with R: Write Your Own Functions and Simulations, 1st edition, O'Reilly Media.</p>																																	