

# MODELING AND OPTIMIZATION II

Bachelor Degree:	MATHEMATICS	701G	
Course title:	Modeling and Optimization II	412	
Year/Semester:	3Y/2S	ECTS Credits:	6

### DEPARTMENT

Mathematics and Computer Sciences						
Address:	Edificio CCT, C/ Madre de Dios 53					
City:	Logroño	Province:	La Rioja	Postal code:	26004	
Phone number:	941 299 452		Email address:	dpto.dmc@unirioja.es		

### **ENGLISH-FRIENDLY FACULTY**

Name:	José Manuel Gutiérrez Jiménez			
Phone number:	941 299 458	Email address:	jmguti@unirioja.es	
Office:	3230	Building:	Edificio CCT	

# CONTENTS

UNIT 1. Introduction to Mathematical Modeling

UNIT 2. Continuous dynamical systems: models and applications

UNIT 3. Discrete dynamical systems: models and applications

UNIT 4. Stochastic differential equations: models and applications

#### REFERENCES

Title

Steven H. Strogatz: Nonlinear dynamics and chaos with application to physics, biology, chemistry and engineering. Cambridge, MA. Perseus Books, 2001.

Mike Mesterton-Gibbon: A concrete approach to mathematical modelling. New York, John Wiley & Sons, 2007

Grégoire Allaire: Numerical analysis and optimization : an introduction to mathematical modelling and numerical simulation. Oxford, England : Oxford University Press, 2007.

K. K. Tung: Topics in mathematical modeling. Princeton (New Jersey), Princeton University Press, 2007.

## **EVALUATION SYSTEM**

Exams (50%); Projects (40%); Activities in the classroom (10%)

