

SUBJECT TEACHING GUIDE

G745 - Machines and Mechanisms

Degree in Mechanical Engineering

Academic year 2022-2023

1. IDENTIFYING DATA					
Degree	Degree in Mechanical Engineering			Type and Year	Compulsory. Year 2
Faculty	School of Industrial Engineering and Telecommunications				
Discipline	Subject Area: Machines and Mechanisms Module in Common with the Industrial Branch				
Course unit title and code	G745 - Machines and Mechanisms				
Number of ECTS credits allocated	6	Term	Semester based (2)		
Web	https://ocw.unican.es/course/view.php?id=262				
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. INGENIERIA ESTRUCTURAL Y MECANICA				
Name of lecturer	ALFONSO FERNANDEZ DEL RINCON				
E-mail	alfonso.fernandez@unican.es				
Office	E.T.S. de Ingenieros Industriales y de Telecomunicación. Planta: - 2. DESPACHO (S2042)				
Other lecturers	CARLOS AGUILAR QUINTANA				

3.1 LEARNING OUTCOMES

- Students will be able to understand the basic concepts of machine theory and its application, providing them the capability to follow other subjects and develop professional activities as mechanical engineer

- Students will be able to analyse and understand different kinds of mechanical systems

- Students will be able to define the basic features and requirements of a mechanism from the point of view of kinematics as well as perform dimensional synthesis

4. OBJECTIVES

Students should know and apply:

The relationship between geometry, tipology and movement of mechanisms.

The techniques to determine the position, velocity and acceleration of the different components of a mechanical system

The procedures to obtain the path of a particular point.

The basic tools used in the kinematic synthesis of linkages

The problems and the design rules in cam-follower systems

The terminology and basic parameters of gear transmissions

The design procedures and kinematic analysis of gear transmissions

The student should be able to

Identify and represent properly the main components of a mechanical system

Handle and apply laboratory tools and instruments

Apply correctly computer tools useful in the design and synthesis of mechanical systems

6. COURSE ORGANIZATION

CONTENTS

1	Introduction to the Mechanism and Machine Theory
2	Plane Movement geometry
3	Kinematic Analysis: Graphics, analytical and numerical methods
4	Kinematic Synthesis of mechanisms
5	Cams
6	Gears

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Written test for Blocks I, II and III	Written exam	No	Yes	40,00
Written Test for blocks IV, V, VI	Written exam	Yes	Yes	40,00
Activities and exercises proposed through the course	Others	No	No	10,00
Practical exercises in Lab	Laboratory evaluation	No	No	10,00
TOTAL				100,00
Observations				
Observations for part-time students				
tbd				

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

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|--------|--|
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| [Sim] | Simon, A.; Bataller, A.; Guerra, A.J.; Ortiz, A.; Cabrera, J. A., Fundamentos de Teoría de Máquinas, Ed. Bellisco, 2000. |