



UNIVERSIDAD DE CASTILLA - LA MANCHA

GUÍA DOCENTE

1. General information

Course: MECHANISM AND MACHINE THEORY

Code: 56314

Type: CORE COURSE

ECTS credits: 6

Degree: 415 - UNDERGRADUATE DEGREE PROGRAMME IN ELECTRICAL ENGINEERING

Academic year: 2023-24

Center: 303 - E.DE INGENIERÍA INDUSTRIAL Y AEROSPOACIAL DE TOLEDO

Group(s): 40

Year: 2

Duration: C2

Main language: Spanish

Second language:

Use of additional languages:

English Friendly: Y

Web site: <https://www.uclm.es/toledo/eiia>

Bilingual: N

Lecturer: CARMEN RAMIRO REDONDO - Group(s): 40				
Building/Office	Department	Phone number	Email	Office hours
Sabatini / 1.51	MECÁNICA ADA. E ING. PROYECTOS	926051443	carmen.ramiro@uclm.es	In order to guarantee the correct individualized attention to the student, the tutoring schedule will be arranged with the interested party by e-mail.

2. Pre-Requisites

The student must have acquired the knowledge imparted in the subjects of mathematics, physics and graphic expression.

3. Justification in the curriculum, relation to other subjects and to the profession

Knowledge of classical mechanics, together with the principles of operation and analysis of mechanisms, will provide the necessary skills to solve problems related to the analysis and design of machines and mechanisms. On the other hand, the subject helps to enhance essential skills in engineering such as spatial vision, and the vision of movement; as well as the acquisition of language and technical culture that facilitates communication in the workplace of industrial engineering.

4. Degree competences achieved in this course

Course competences

Code	Description
CB02	Apply their knowledge to their job or vocation in a professional manner and show that they have the competences to construct and justify arguments and solve problems within their subject area.
CB03	Be able to gather and process relevant information (usually within their subject area) to give opinions, including reflections on relevant social, scientific or ethical issues.
CB04	Transmit information, ideas, problems and solutions for both specialist and non-specialist audiences.
CB05	Have developed the necessary learning abilities to carry on studying autonomously
CEC07	Knowledge of the principles of theory of machines and mechanisms.
CG03	Knowledge of basic and technological subjects to facilitate learning of new methods and theories, and provide versatility to adapt to new situations.
CG04	Ability to solve problems with initiative, decision-making, creativity, critical reasoning and to communicate and transmit knowledge, skills and abilities in the field of industrial engineering.
CT02	Knowledge and application of information and communication technology.
CT03	Ability to communicate correctly in both spoken and written form.

5. Objectives or Learning Outcomes

Course learning outcomes

Description

Knowledge of the fundamentals of solid mechanics.
 Knowledge of the fundamentals of kinematic and dynamic analysis of flat mechanisms.
 Ability to apply these fundamentals to the design of mechanical systems.

6. Units / Contents

- Unit 1: Vectors, forces and moments.**
- Unit 2: Point kinematics and particle dynamics.**
- Unit 3: Interactions, systems and kinematic pairs.**
- Unit 4: Relative motion and kinematic analysis of mechanisms.**
- Unit 5: Kinematics and dynamics of the rigid body and dynamic analysis of mechanisms.**

7. Activities, Units/Modules and Methodology

	Related Competences					

Training Activity	Methodology	(only degrees before RD 822/2021)	ECTS	Hours	As	Com	Description
Class Attendance (theory) [ON-SITE]	Lectures	CB02 CB03 CB04 CB05 CEC07 CG03 CG04 CT02 CT03	0.88	22	N		Participative lectures will be combined with exercises and problem solving and group tutorials.
Problem solving and/or case studies [ON-SITE]	Problem solving and exercises	CB02 CB03 CB04 CB05 CEC07 CG03 CG04 CT02 CT03	0.72	18	Y	N	In-class problem solving and exercises.
Class Attendance (practical) [ON-SITE]	Practical or hands-on activities	CB02 CB03 CB04 CB05 CEC07 CG03 CG04 CT02 CT03	0.6	15	Y	N	Laboratory practices, in computer classroom and experimental demonstrations in the classroom.
Formative Assessment [ON-SITE]	Assessment tests	CB02 CB03 CB04 CB05 CEC07 CG03 CG04 CT02 CT03	0.2	5	Y	Y	Final exam.
Study and Exam Preparation [OFF-SITE]	Self-study	CB02 CB03 CB04 CB05 CEC07 CG03 CG04 CT02 CT03	3.6	90	N		Autonomous work of the student for the preparation of tests, exercises and assignments.
Total:			6	150			
Total credits of in-class work: 2.4			Total class time hours: 60				
Total credits of out of class work: 3.6			Total hours of out of class work: 90				

As: Assessable training activity

Com: Training activity of compulsory overcoming (It will be essential to overcome both continuous and non-continuous assessment).

8. Evaluation criteria and Grading System			
Evaluation System	Continuous assessment	Non-continuous evaluation*	Description
Assessment of problem solving and/or case studies	15.00%	15.00%	Theoretical-practical written test. In non-continuous evaluation, a global exam different from the continuous evaluation will assess all the evaluable formative activities as a whole.
Final test	70.00%	70.00%	In continuous evaluation will consist of the completion of exercises proposed throughout the course.
Laboratory sessions	15.00%	15.00%	Continuous evaluation will consist of the completion of exercises or works proposed throughout the course related to the laboratory practices. Non-continuous evaluation will consist of the specific resolution of several exercises or assignments related to the laboratory practices of similar characteristics.
Total:	100.00%	100.00%	

According to art. 4 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 12.2) to be globally graded, in 2 annual calls per subject, an ordinary and an extraordinary one (evaluating 100% of the competences).

Evaluation criteria for the final exam:

Continuous assessment:

The final mark will be the result of applying the evaluation system described above. In order to successfully pass the course, a mark equal or higher than 5 out of 10 must be obtained.

Non-continuous evaluation:

The final mark will be the result of applying the evaluation system described above. In order to successfully pass the course, a mark equal or higher than 5 out of 10 must be obtained.

9. Assignments, course calendar and important dates	
Not related to the syllabus/contents	
Hours	hours
Class Attendance (theory) [PRESENCIAL][Lectures]	22
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	18
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	15
Formative Assessment [PRESENCIAL][Assessment tests]	5
Study and Exam Preparation [AUTÓNOMA][Self-study]	90
Global activity	
Activities	hours
Study and Exam Preparation [AUTÓNOMA][Self-study]	90
Class Attendance (theory) [PRESENCIAL][Lectures]	22
Formative Assessment [PRESENCIAL][Assessment tests]	5
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	18
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	15
Total horas: 150	

10. Bibliography and Sources						
Author(s)	Title/Link	Publishing house	City	ISBN	Year	Description

McGill, David J.	Mecánica para ingeniería y sus explicaciones	Grupo Editorial Iberoamérica	968-7270-69-1	1991
Hibbeler, R.C.	Ingeniería Mecánica: dinámica	Pearson Educación	978-607-32-3697-3	2016
Beer, Ferdinand P.	Mecánica vectorial para ingenieros	Mc-Graw-Hill	978-970-10-6102-2	2007
Pérez García, Víctor M.	100 problemas de mecánica	Alianza	84-206-8636-0	1997
Shames, Irving H.	Mecánica para ingenieros: estática	Prentice Hall	84-8322-044-X	2001
Shames, Irving H.	Mecánica para ingenieros: dinámica	Prentice Hall	84-8322-045-8	1999
Mable, Hamilton H.	Mecanismos y dinámica de maquinaria	Limusa Wiley	978-968-18-4567-4	2007
Pintado Sanjuán, Publio	Mecánica vectorial en ejemplos	Paraninfo	978-84-283-3928-5	2017
Erdman, A. G.	Mechanism Design: analysis and synthesis, vol. I	Prentice-Hall		1997
Carril, Roberto D.	Mecánica: problemas explicados	Júcar	84-334-0524-1	1987
Hibbeler, R.C.	Ingeniería mecánica: estática	Person Educación	978-607-32-3707-9	2016
de Juana, J.M.	Mecánica, problemas de examen resueltos	Paraninfo		