

MECHANICS FOR ENGINEERS

33506 - MECHANICS FOR ENGINEERS (2024-25)

General

Code: 33506

Lecturer responsible:

FERRER CRESPO, MARIA BELEN

Credits ECTS:	
Theoretical credits:	1,20
Practical credits:	1,20
Distance-base hours:	3,60

Departments involved

- **Dept:** APPLIED PHYSICS
Area: APPLIED PHYSICS
Theoretical credits: 0
Practical credits: 0
- **Dept:** PHYSICS, ENGINEERING SYSTEMS AND SIGNAL THEORY
Area: APPLIED PHYSICS
Theoretical credits: 0
Practical credits: 0
- **Dept:** APPLIED MATHEMATICS
Area: APPLIED MATHEMATICS
Theoretical credits: 0
Practical credits: 0
- **Dept:** CIVIL ENGINEERING
Area: CONTINUUM MECHANICS AND STRUCTURE THEORY
Theoretical credits: 1,2
Practical credits: 1,2
This Dept. is responsible for the course.
This Dept. is responsible for the final mark record.

Study programmes where this course is taught

- [DEGREE IN CIVIL ENGINEERING](#)
Course type: CORE (Year: 1)

Competencies and objectives

Course context for academic year 2024-25

This subject belongs to the first year of the Degree in Civil Engineering and it is taught during the second semester.

In this course the necessary tools to start with the design of structures are studied. These tools are essential for tracking the subjects 33510 and 33515 (Design of structures I and II). In addition, students will be able to solve some particular types of structures.

PRIOR KNOWLEDGE

To successfully address the subject, it is essential to have a thorough knowledge and agility in trigonometry and mathematics.

Course content (verified by ANECA in official undergraduate and Master's degrees) for academic year {0}

General Competences (CG)

- **CG4** : Comprensió i domini dels conceptes bàsics sobre les lleis generals de la mecànica, termodinàmica, camps i ones i electromagnetisme i la seua aplicació per a la resolució de problemes propis de l'enginyeria.

Competencias Generales (Objetivos)

- **O1** : Capacitación científica-técnica para el ejercicio de la profesión de Ingeniero Técnico de Obras Públicas y conocimiento y ejercicio de las funciones de asesoría, análisis, planificación, diseño, cálculo, proyecto, dirección, construcción, gestión, mantenimiento, conservación y explotación en el ámbito de la Ingeniería Civil.

Specific Competences (Civil Branch)

- **CE4** : Capacitat per a analitzar i comprendre com les característiques de les estructures influeixen en el seu comportament. Capacitat per a aplicar els coneixements sobre el funcionament resistent de les estructures per a dimensionar-les.

Basic Transversal Competences

- **CB1** : Que els estudiants hagen demostrat tenir i comprendre coneixements en un àrea d'estudi que parteix de la base de l'educació secundària general, i se sol trobar en un nivell que, si bé se sustenta en llibres de text avançats, inclou també aspectes que impliquen coneixements procedents de l'avantguarda del seu camp d'estudi.
- **CB2** : Que els estudiants sàpien aplicar els seus coneixements al seu treball o vocació d'una manera professional i tinguen les competències que se solen demostrar a través de l'elaboració i defensa d'arguments i la resolució de problemes dins de la seua àrea d'estudi.
- **CB5** : Que els estudiants hagen desenvolupat les habilitats d'aprenentatge necessàries per a emprendre estudis posteriors amb un alt grau d'autonomia.

Exclusive skill taught in this course

No data

Learning outcomes (Training objectives)

No data

Specific objectives stated by the academic staff for academic year 2024-25

The global goal is to introduce the students in the calculation of structures, dealing specially with the isostatic structures. The main goal is the student to be able to obtain the efforts at the resultant level that are acting at any point of a determined and pinned structure. The skill in obtaining these efforts, together with the knowledge of mass geometry, which is also part of the objectives of this course, will lead the student in a position to successfully face the rest of the knowledge related to the structural calculation that will be developed in later courses of this degree.

Content and bibliography

Content for academic year 2024-25

CHAPTER 1: INTRODUCTION

CHAPTER 2: STATICS OF PARTICLES

CHAPTER 3: RIGID BODIES: EQUIVALENT SYSTEMS OF FORCES

CHAPTER 4: EQUILIBRIUM OF RIGID BODIES

CHAPTER 5: DISTRIBUTED FORCES: CENTROIDS AND CENTERS OF GRAVITY

CHAPTER 6: ANALYSIS OF STRUCTURES

CHAPTER 7: FORCES IN BEAMS AND CABLES

CHAPTER 8: FRICTION

CHAPTER 9: DISTRIBUTED FORCES: MOMENTS OF INERTIA

Related links

No data

Mecánica para ingenieros: Estática

Author(s): SHAMES, H, Irving

Issue: Madrid : Prentice Hall, 1999;

ISBN: 84-8322-044-X

Category: Sin especificar

Mecánica para ingeniería : estática, quinta edición

Author(s): Bedford, Anthony ; Fowler, Wallace

Issue: México : Pearson Educación, 2008;

ISBN: 978-970-26-1215-5

Category: Sin especificar

Mecánica vectorial para ingenieros : Estática, undécima edición

Author(s): Beer, Ferdinand P. ; Johnston, E. Russell

Issue: México, D.F. : McGraw-Hill Interamericana, 2017;

ISBN: 978-1-4562-5527-5

Category: Básico

Mecánica vectorial para ingenieros : dinámica

Author(s): Beer, Ferdinand P.

Issue: México D.F. : McGraw-Hill, 2021;

ISBN: 978-1-4562-8759-7

Category: Básico

Mecánica para ingenieros : dinámica

Author(s): Shames, Irving H.

Issue: Madrid : Prentice Hall, 1999;

ISBN: 84-8322-045-8

Category: Sin especificar

Mecánica para ingenieros V.1 Estática

Author(s): Meriam, J. L.; Kraige, L. G.

Issue: Barcelona : Reverté, 1999;

ISBN: 84-291-4257-6 (v.1)

Category: Sin especificar

Problemas de mecánica

Author(s): Alloza Cerdá, Leandro

Issue: San Vicente del Raspeig : Gamma, 1995;

ISBN: 84-89522-12-X

Category: Sin especificar

Mecánica para ingenieros : [estática y dinámica]

Author(s): Vázquez Fernández, Manuel

Issue: Madrid : Noela, 1998;

ISBN: 978-84-88012-04-3

Category: Sin especificar

Teoría y problemas de mecánica técnica: estática y dinámica

Author(s): McLEAN, W. G,

Issue: Panamá : McGraw-Hill, 1969;

ISBN: -

Category: Sin especificar

Ingeniería mecánica, estática

Author(s): Riley, William F.; Sturges, Leroy D.

Issue: Barcelona : Reverté, 1996;

ISBN: 978-84-291-4255-6

Category: Complementario

Mecánica Newtoniana para Ingenieros

Author(s): VIANA MARTÍNEZ, Vicente

Issue: San Vicente del Raspeig : Puntero y Chip, 2011;

ISBN: 978-84-95434-84-5

Category: Sin especificar

Vector mechanics for engineers. Statics

Author(s): BEER, Ferdinand P. ; JOHSTON, E. Russell ; MAZUREK, David F.

Issue: Singapore : McGraw-Hill Education, 2012;

ISBN: 978-9-814-66073-0

Category: Básico

Assessment

Assessment procedures and criteria 2024-25

The overall rating of the course will be the sum of the marks obtained in continuous evaluation (weighted 50%) and that obtained in the final exam (weighted 50%).

The final exam can be recovered in the July evaluation. In this evaluation the mark of the control obtained during the continuous evaluation can also be recovered, if the student express that in the moment of the July final exam. In this case, the July final exam will be graded up to 9 points.

The mark obtained in the Juny final exam will not be maintained in the July evaluation.

Description	Criteria	Type	Weighting system
Control Check (recoverable)	A control check will be done in the first half part of the semester. All theoretical and practical questions that were developed in class until the date of the control could be required to pass the probe.	ACTIVITIES OF EVALUATION DURING THE SEMESTER	40
Laboratory Exercises (non-recoverable)	Three laboratory exercises will be done during the development of the course. At the end of each exercise, the student must submit a report of the exercise, in which he should solve the theoretical and practical issues arising therein. A report will be given by each student. No reports delivered after the finalization of the exercise will be accepted. This exercises cannot be repeated, neither in June nor in July. The score obtained in laboratory exercises will be maintained in both the June exam as in July.	ACTIVITIES OF EVALUATION DURING THE SEMESTER	10
Final exam (recoverable)	A final examination in which the knowledge acquired during the development of the course will be made. This test will be evaluated throughout the subject taught in the course, regardless of the results obtained in the control class and laboratory practices. The weighting of the final exam is 50%.	FINAL TEST	50

Official exam dates for academic year 2024-25

Exam session	Date	Time	Group - Classroom(s) allocated	Comments
(C3) Periodo ordinario para asignaturas de segundo semestre y anuales	02/06/2025			Teoría
(C4) Pruebas extraordinarias para asignaturas de grado y máster	02/07/2025			Teoría

Academic staff



FERRER CRESPO, MARIA BELEN

Lecturer responsible

THEORY CLASS: Groups: 1 , 2

LAB PRACTICALS: Groups: 7

PROBLEM PRACTICALS / WORKSHOP: Groups: 3



GARCIA SANTOS, JUAN IGNACIO

LAB PRACTICALS: Groups: 1 , 2 , 3 , 4 , 5 , 6



VALERO LOPEZ, JOSE FRANCISCO

THEORY CLASS: Groups: 1

LAB PRACTICALS: Groups: 1 , 2 , 3 , 4 , 5 , 6

PROBLEM PRACTICALS / WORKSHOP: Groups: 1 , 2

Groups

THEORY CLASS

Group	Semester	Morning or afternoon session	Language	No. of enrolled students
Gr. 1 (THEORY CLASS) : 1	2S	Morning	Spanish	132
Gr. 2 (THEORY CLASS) : 2 ENG	2S	Afternoon	English	8

LAB PRACTICALS



Group	Semester	Morning or afternoon session	Language	No. of enrolled students
Gr. 1 (LAB PRACTICALS) : 1	2S	Afternoon	Spanish	25
Gr. 2 (LAB PRACTICALS) : 2	2S	Afternoon	Spanish	21
Gr. 3 (LAB PRACTICALS) : 3	2S	Afternoon	Spanish	21
Gr. 4 (LAB PRACTICALS) : 4	2S	Afternoon	Spanish	22
Gr. 5 (LAB PRACTICALS) : 5	2S	Afternoon	Spanish	18
Gr. 6 (LAB PRACTICALS) : 6	2S	Afternoon	Spanish	22
Gr. 7 (LAB PRACTICALS) : 7 ENG	2S	Afternoon	English	11

PROBLEM PRACTICALS / WORKSHOP
















Group	Semester	Morning or afternoon session	Language	No. of enrolled students
Gr. 1 (PROBLEM PRACTICALS / WORKSHOP) : 1	2S	Morning	Spanish	72
Gr. 2 (PROBLEM PRACTICALS / WORKSHOP) : 2	2S	Morning	Spanish	59
Gr. 3 (PROBLEM PRACTICALS / WORKSHOP) : 3 ENG	2S	Morning	English	9






















Timetables



THEORY CLASS

Group	Start date	End date	Day	Start time	End time	Lecture room
1	27/01/2025	23/05/2025	MIE	09:30	11:30	A3/0012 
2	27/01/2025	23/05/2025	MIE	15:00	17:00	A3/0011 









LAB PRACTICALS

Group	Start date	End date	Day	Start time	End time	Lecture room
1	04/03/2025	04/03/2025	MAR	15:00	17:30	0015P1105 
1	07/03/2025	07/03/2025	VIE	09:30	12:00	0015P1105 
1	28/03/2025	28/03/2025	VIE	09:30	12:00	0015P1105 
1	06/05/2025	06/05/2025	MAR	15:00	17:30	0015P1105 
1	09/05/2025	09/05/2025	VIE	09:30	12:00	0015P1105 
2	11/03/2025	11/03/2025	MAR	15:00	17:30	0015P1105 
2	14/03/2025	14/03/2025	VIE	09:30	12:00	0015P1105 
2	01/04/2025	01/04/2025	MAR	15:00	17:30	0015P1105 
2	04/04/2025	04/04/2025	VIE	09:30	12:00	
2	13/05/2025	13/05/2025	MAR	15:00	17:30	0015P1105 
2	16/05/2025	16/05/2025	VIE	09:30	12:00	0015P1105 
3	18/03/2025	18/03/2025	MAR	15:00	17:30	0015P1105 
3	21/03/2025	21/03/2025	VIE	09:30	12:00	0015P1105 
3	08/04/2025	08/04/2025	MAR	15:00	17:30	0015P1105 
3	11/04/2025	11/04/2025	VIE	09:30	12:00	0015P1105 

Group	Start date	End date	Day	Start time	End time	Lecture room
3	20/05/2025	20/05/2025	MAR	15:00	17:30	0015P1105 
3	23/05/2025	23/05/2025	VIE	09:30	12:00	0015P1105 
4	04/03/2025	04/03/2025	MAR	17:30	20:00	0015P1105 
4	07/03/2025	07/03/2025	VIE	12:00	14:30	0015P1105 
4	25/03/2025	25/03/2025	MAR	17:30	20:00	0015P1105 
4	28/03/2025	28/03/2025	VIE	12:00	14:30	0015P1105 
4	06/05/2025	06/05/2025	MAR	17:30	20:00	0015P1105 
4	09/05/2025	09/05/2025	VIE	12:00	14:30	0015P1105 
5	11/03/2025	11/03/2025	MAR	17:30	20:00	0015P1105 
5	14/03/2025	14/03/2025	VIE	12:00	14:30	0015P1105 
5	01/04/2025	01/04/2025	MAR	17:30	20:00	0015P1105 
5	04/04/2025	04/04/2025	VIE	12:00	14:30	0015P1105 
5	13/05/2025	13/05/2025	MAR	17:30	20:00	0015P1105 
5	16/05/2025	16/05/2025	VIE	12:00	14:30	0015P1105 
6	18/03/2025	18/03/2025	MAR	17:30	20:00	0015P1105 
6	21/03/2025	21/03/2025	VIE	12:00	14:30	0015P1105 
6	08/04/2025	08/04/2025	MAR	17:30	20:00	0015P1105 
6	11/04/2025	11/04/2025	VIE	12:00	14:30	0015P1105 
6	20/05/2025	20/05/2025	MAR	17:30	20:00	0015P1105 
6	23/05/2025	23/05/2025	VIE	12:00	14:30	0015P1105 
7	03/03/2025	03/03/2025	LUN	15:00	17:30	0015P1105 

Group	Start date	End date	Day	Start time	End time	Lecture room
7	24/03/2025	24/03/2025	LUN	15:00	17:30	0015P1105 
7	05/05/2025	05/05/2025	LUN	15:00	17:30	0015P1105 

PROBLEM PRACTICALS / WORKSHOP

Group	Start date	End date	Day	Start time	End time	Lecture room
1	28/01/2025	11/03/2025	MAR	10:30	11:30	0016P1008 
1	25/03/2025	15/04/2025	MAR	10:30	11:30	0016P1008 
1	29/04/2025	20/05/2025	MAR	10:30	11:30	0016P1008 
2	28/01/2025	11/03/2025	MAR	09:30	10:30	0016P1008 
2	25/03/2025	15/04/2025	MAR	09:30	10:30	0016P1008 
2	29/04/2025	20/05/2025	MAR	09:30	10:30	0016P1008 
3	28/01/2025	11/03/2025	MAR	12:00	13:00	0016P1008 
3	25/03/2025	15/04/2025	MAR	12:00	13:00	0016P1008 
3	29/04/2025	20/05/2025	MAR	12:00	13:00	0016P1008 