SUBJECT TEACHING GUIDE

G1981 - Machinery, Equipment and Plant

Degree in Civil Engineering

Academic year 2022-2023

1. IDENTIFYING DATA					
Degree	Degree in Civil Engineering			Type and Year	Compulsory. Year 3
Faculty	School of civil Engineering				
Discipline	CONSTRUCTION OF PUBLIC WORKS				
Course unit title and code	G1981 - Machinery, Equipment and Plant				
Number of ECTS credits allocated	6	Term		Semester based (2)	
Web					
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. TRANSPORTES Y TECNOLOGIA DE PROYECTOS Y PROCESOS
Name of lecturer	PABLO PASCUAL MUÑOZ
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Other lecturers	FRANCISCO BALLESTER MUÑOZ LUIS MANUEL ACEBES ESCUDERO DANIEL CASTRO FRESNO

3.1 LEARNING OUTCOMES

- In-depth knowledge about the construction equipment used in earthmoving.

Integrattion of technical, economic and occupational risk prevention factors in the selection of the construction machinery.

Selection of the equipment for an aggregate treatment plant.

Management of asphalt and concrete plants on site.

Technical qualification to manage the laying of asphalt and concrete on site .

Selection of lifting equipment.

Basic knowledge on the main types of precast products as well as on their manufacturing process, transport and laying.

4. OBJECTIVES

To provide the student with the necessary elements to identify , select and contract the equipment to be used for the earthworks.

To offer the student the necessary tools to evaluate and optimize the productivity and the costs associated with the machinery used.

To provide the student with the ability to select the equipment for lifting and placing of precast elements on site .

To qualify the student for the identification , contract and management of the aggregate, concrete and bituminous mixtures plants required for the proper development of the construction work.

6. COURSE ORGANIZATION

	CONTENTS
1	Section 1. Introduction to the earthmoving and its equipment T1. Technical basis of the construction works . T2. Fundamentals of earthworks. Earth compensation. T3. Production and costs of equipment. PA1. Exercises of earth compensation.
2	Section 2. Production and Fleet Sizing T4. Machinery for cutting, pushing and ripping. T5. Machinery for excavation and loading. T6. On- and off-highway trucks. T7. Machinery for stabilization, leveling and compaction. PA2. Production and costs of machinery. Fleet sizing. PLO. Exercises with Excel and FPC.
3	Section 3. Auxiliary equipment and plants T8. Equipment for lifting and for the assembly of precast elements. T9. Explosives and aggregate treatment plants. T10. Manufacturing, transport and laying of concrete. T11. Manufacturing, transport and laying of bituminous mixes. T12. Equipment for the construction of roads structures.

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Mid-term Exam 1	Written exam	Yes	Yes	40,00
Mid-term Exam 2	Written exam	Yes	Yes	30,00
Mid-term Exam 2	Laboratory evaluation	No	No	20,00
Delivery of classworks and/or exercises.	Work	No	No	10,00
TOTAL				100,00

Observations

Students will have to retake only those assessed parts that they have failed (grade lower than 5), and will not be able to take any part of the course that they have passed (grade higher than 5).

Getting a grade of 4 in any of the mid-tem exams will allow the students to keep that grade in all the calls of the current academic year.

Once a call is closed, if the student's global weighted average grade in the subject is equal or higher than 5 but he/she has not obtained the minimum grade in some of its parts, the final grade will be FAIL 4.

Only for duly justified reasons (e.g. health restrictions) can be the assessment tests organized remotely, and always with the prior authorization of the Head of the School.

Observations for part-time students

In order to take the final theory exam, part-time students are required to have a grade in the laboratory (computer) sessions.

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

- Apuntes de la asignatura.
- Máquinas de movimiento de tierras: criterios de selección. Francisco Ballester y Jorge A. Capote. 1992.
- Manual de movimiento de tierras a cielo abierto. Julián Rojo López. Madrid. Fueyo, 2010.
- Manual de maquinaria de construcción. Manuel Díaz del Rio. McGraw-Hill / Interamericana de España, S.A. 2001.
- Movimiento de tierras : utilización de la maquinaria, producciones y casos prácticos, compactación de materiales, utilización de compactadores. Juan Tiktin. Madrid. ETS Ingenieros de Caminos, Canales y Puertos, Servicio de Publicaciones, 1997.