



Teaching Guide

Teaching Guide				
Identifying Data				2023/24
Subject (*)	Auxiliary Equipment in Building		Code	670G01127
Study programme	Grao en Arquitectura Técnica			
Descriptors				
Cycle	Period	Year	Type	Credits
Graduate	2nd four-month period	Third	Obligatory	6
Language	Spanish			
Teaching method	Non-attendance			
Prerequisites				
Department	Construcións e Estruturas Arquitectónicas, Cívís e Aeronáuticas			
Coordinador	Fernandez Prado, Ruben		E-mail	ruben.fprado@udc.es
Lecturers	Fernandez Prado, Ruben Porta Rodriguez, Manuel		E-mail	ruben.fprado@udc.es m.porta@udc.es
Web				
General description	Conocimiento de aquellos elementos necesarios para llevar a cabo el proceso constructivo, de uso temporal pero que sin embargo no forman parte del edificio terminado. Maquinaria y equipos de obra para los distintos oficios y sistemas constructivos. Andamios, apuntalamientos y apeos. Sistemas de encofrados. Sistemas de elevación de cargas y personas. Maquinaria de movimiento de tierras. Organización de equipos, maquinaria e instalaciones generales de obra. A guía docente oficial é a de Español.			

Study programme competences

Code	Study programme competences
A56	A3.1 Ability to apply building rules and standards, and draw up technical specifications in relation to building methods and procedures.
A62	A4.1 Ability to plan and organise construction processes, equipment, and human and technical resources to carry out construction and maintenance work.
B31	B1 Students will demonstrate knowledge and understanding of subjects that build upon the foundation of a general secondary education using advanced textbooks and ideas and analyses from the cutting edge of their field.
B32	B2 Students will be able to use their knowledge professionally and will possess the skills required to formulate and defend arguments and solve problems within their area of study.
B33	B3 Students will have the ability to gather and interpret relevant data (especially within their field of study) in order to make decisions and reflect on social, scientific and ethical matters.
B34	B4 Students will be able to communicate information, ideas, problems and solutions to specialist and non-specialist audiences alike.
B35	B5 Students will develop the learning skills and autonomy they need to continue their studies at postgraduate level.
C1	Adequate oral and written expression in the official languages.
C3	Using ICT in working contexts and lifelong learning.
C4	Acting as a respectful citizen according to democratic cultures and human rights and with a gender perspective.
C5	Understanding the importance of entrepreneurial culture and the useful means for enterprising people.
C6	Acquiring skills for healthy lifestyles, and healthy habits and routines.
C7	Developing the ability to work in interdisciplinary or transdisciplinary teams in order to offer proposals that can contribute to a sustainable environmental, economic, political and social development.
C8	Valuing the importance of research, innovation and technological development for the socioeconomic and cultural progress of society.
C9	Ability to manage times and resources: developing plans, prioritizing activities, identifying critical points, establishing goals and accomplishing them.

Learning outcomes

Learning outcomes	Study programme competences
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Al finalizar con éxito esta asignatura, los estudiantes serán capaces de organizar, seleccionar, controlar e inspeccionar, conocer partes y características, proyectar, calcular, planificar y diseñar la implantación en obra, de los equipos, maquinaria y medios auxiliares necesarios para la ejecución de edificaciones. Realizar proyectos de implantación de grúa torre, de apeos y apuntalamientos, de demolición y planes de instalación de andamios.	A56	B31	C1
	A62	B32	C3
		B33	C4
		B34	C5
		B35	C6
			C7
			C8
			C9

Contents	
Topic	Sub-topic
BLOQUE 1. ANDAMIOS, APUNTALAMIENTOS Y DERRIBOS	TEMA 1.1. ANDAMIOS TEMA 1.2. APUNTALAMIENTOS TEMA 1.3. MAQUINARIA Y MEDIOS AUXILIARES EN DERRIBO Y DEMOLICIONES TEMA 1.4. OCUPACIÓN DA VÍA PÚBLICA TEMA 1.5. SEÑALIZACIÓN VIARIA
BLOQUE 2. ELEVACIÓN	TEMA 2.1. PRINCIPIOS DE ELEVACIÓN. APARATOS. TEMA 2.2. MAQUINARIA DE ELEVACIÓN TEMA 2.3. GRÚA TORRE
BLOQUE 3. MOVIMIENTO DE TIERRAS	TEMA 3.1. EL TRACTOR TEMA 3.2. EL BULLDOZER TEMA 3.3. MOTOTRAILLA TEMA 3.4. MOTONIVELADORA TEMA 3.5. CARGADORAS TEMA 3.6. EXCAVADORAS, RETROEXCAVADORAS TEMA 3.7. PALA MIXTA TEMA 3.8. EXCAVADORA DE MANDÍBULAS TEMA 3.9. COMPACTACIÓN Y CONSOLIDACIÓN TEMA 3.10. RENDIMIENTO DE MAQUINARIA DE MOVIMIENTO DE TIERRAS. EL TERRENO. TEMA 3.11. POTENCIA EN LA MAQUINARIA DE MOVIMIENTO DE TIERRAS.
BLOQUE 4. INSTALACIONES GENERALES	TEMA 4.1. INSTALACIONES GENERALES DE OBRA. IMPLANTACIÓN. TEMA 4.2. SEGURIDAD EN LAS MÁQUINAS Y MANTENIMIENTO TEMA 4.3. EL MODELO BIM. PLANIFICACIÓN Y DESARROLLO DE MONTAJE DE EQUIPOS.
BLOQUE 5. MAQUINARIA Y MEDIOS AUXILIARES PARA ESTRUCTURAS DE HORMIGÓN	TEMA 5.1. MAQUINARIA Y MEDIOS AUXILIARES EN CIMENTACIONES ESPECIALES TEMA 5.2. MAQUINARIA E MEDIOS AUXILIARES PARA CIMENTACIONES Y ESTRUCTURAS DE HORMIGÓN TEMA 5.3. PEQUEÑA MAQUINARIA Y AUXILIARES

Planning				
Methodologies / tests	Competencies	Ordinary class hours	Student?s personal work hours	Total hours
Guest lecture / keynote speech	A56 A62 B31 B32 B33 B34 B35 C1 C3 C4 C5 C6 C7 C8 C9	23	46	69



Supervised projects	A56 A62 B31 B32 B33 B34 B35 C1 C3 C4 C5 C6 C7 C8 C9	23	23	46
Events academic / information	A56 A62 B31 B32 B33 B34 B35 C1 C3 C4 C5 C6 C7 C8 C9	2	6	8
Objective test	A56 A62 B31 B32 B33 B34 B35 C1 C3 C4 C5 C6 C7 C8 C9	5	20	25
Personalized attention		2	0	2
(*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.				

Methodologies	
Methodologies	Description
Guest lecture / keynote speech	Oral and graphic exhibition on blackboard and support of audiovisual media with specific insertion of invitation to the students to comments and debate to appreciate points of view and facilitate learning.
Supervised projects	Practices will be carried out during the interactive sessions, complemented with the use of computer resources so that the student can solve in person the problems proposed by the teacher. There will be 4 types of projects: scaffolding project (plan), demolition project (application + traditional), shoring project and tower crane implementation project, as a team, which will begin in the interactive classes and will be completed at home, also as a team. The projects proposed by the professor will be presented publicly in the interactive sessions.
Events academic / information	There will be one or several outings to work or there will be an attendance to a conference that will be graded according to the attendance, the active participation of the student or the presentation of a work related to it.
Objective test	Individual written test that integrates open questions of both theory and problem solving. In addition, with regard to objective questions, you can combine multiple-choice, ordering, short answer, discrimination, completion and / or association questions. The resolution of practical exercises may also be proposed.

Personalized attention	
Methodologies	Description
Objective test Guest lecture / keynote speech Supervised projects Events academic / information	In-office tutorials during the academic period of the course, at the request of the student or teacher. The personalized attention will not substitute in any case to the expository sessions or the interactive sessions exposed during the course, but it will serve as complement and support to the student in those matters in which, in spite of having made reasonable attempts to solve it, it does not reach assimilate the concept. The student must request a prior appointment for tutorials by mail.

Assessment			
Methodologies	Competencies	Description	Qualification
Objective test	A56 A62 B31 B32 B33 B34 B35 C1 C3 C4 C5 C6 C7 C8 C9	Individual written test that integrates open questions of both theory and problem solving. In addition, with regard to objective questions, you can combine multiple-choice, ordering, short answer, discrimination, completion and / or association questions. The resolution of practical exercises may also be proposed.	70



Guest lecture / keynote speech	A56 A62 B31 B32 B33 B34 B35 C1 C3 C4 C5 C6 C7 C8 C9	Oral and graphic exhibition on blackboard and support of audiovisual media with specific insertion of invitation to the students to comments and debate to appreciate points of view and facilitate learning. The minimum compulsory attendance will be 80% of the expository classes to qualify for the qualification.	2
Supervised projects	A56 A62 B31 B32 B33 B34 B35 C1 C3 C4 C5 C6 C7 C8 C9	The 4 projects presented will be evaluated, both in their development part and the oral presentation of them in the interactive sessions.	27
Events academic / information	A56 A62 B31 B32 B33 B34 B35 C1 C3 C4 C5 C6 C7 C8 C9	The attendance will be essential, the active involvement of the student in the activity will be valued, and in his case, the teacher will be able to request a work about the subject matter for its qualification.	1
Others			

Assessment comments

Para superar la materia es obligatorio obtener una calificación de 5 sobre 10 en la prueba objetiva, que computará el 70% sobre la calificación final. La calificación obtenida en la resolución de los proyectos propuestos, entregados y defendidos en presentación oral durante las clases interactivas constituirá el 27% de la calificación final.

La participación activa en las sesiones magistrales computará el 2% de la nota final y la asistencia a conferencias (o salida al campo) computará el 1% según su aprovechamiento.

Podrán presentarse a la prueba objetiva (tanto en la primera oportunidad como en la segunda) todos los alumnos.

Si la prueba objetiva no ha sido aprobada la calificación final de la asignatura será la obtenida en el examen computando al 100%.

No se corregirá ninguna prueba objetiva que no se firme ni se cubran todos los datos personales.

El alumno que no asista a las clases prácticas o no realice la prueba objetiva será calificado con "No Presentado".

Los trabajos prácticos tendrán validez solamente para el curso en vigor.

Los alumnos con dispensa académica deberán realizar la prueba objetiva que computará al 100% de la calificación.

En la segunda oportunidad solamente se tendrá en cuenta para la calificación de la asignatura la calificación obtenida en el examen.

Sources of information

Basic	Eduardo Lagarde Abrisqueta (1988). EQUIPOS DE OBRAS Y MEDIOS AUXILIARES. Getafe (Madrid). Fundación Escuela de la Edificación Manuel Díaz del Río y Jádenes (2007). MANUAL DE MAQUINARIA DE CONSTRUCCIÓN. Madrid. McGraw Hill Frank Harris (1992). MAQUINARIA Y MÉTODOS MODERNOS DE CONSTRUCCIÓN. Madrid. Bellisco e Hijos F. Ballester y J. Capote (1992). MÁQUINAS DE MOVIMIENTO DE TIERRAS. Madrid. PEDECA Andrés Abasolo (2005). CONSTRUCCIÓN Y MÁQUINAS EN EDIFICACIÓN. Madrid. Munilla-Leira, S.L. Félix Hernández Castellá y Luis Fernández Montes (1986). INTRODUCCIÓN A LA COMPACTACIÓN VIBRATORIA. Zaragoza. LEBRERO (varias firmas comerciales) (2004). OPERADOR DE GRÚA TORRE. Segovia. ATRIUM Luis Jiménez López (2002). OPERADOR DE GRÚAS TORRE. Barcelona. Grupo CEAC Miguel Ángel Menéndez González (2004). MANUAL PARA LA FORMACIÓN DE OPERADOR DE GRÚA TORRE. Valladolid. Fundación Laboral de la Construcción del Principado de Asturias y Lex Nova, S.A. SOCIEDAD FRANCO-ESPAÑOLA DE ALAMBRES, CABLES Y TRANSPORTES AÉREOS, S.A. (1965). CATÁLOGO DE LA SOCIEDAD FRANCO-ESPAÑOLA DE ALAMBRES, CABLES Y TRANSPORTES AÉREOS, S.A.. Bilbao E. Carnicer Royo (1981). EQUIPOS Y HERRAMIENTAS NEUMÁTICAS. Barcelona. Gustavo Gili Pierre Cormon (1979). FABRICACIÓN DEL HORMIGÓN. Barcelona. E.T.A. Juan Tiktin (1995). MOVIMIENTO DE TIERRAS. Madrid. Colegio de Ingenieros de Caminos, Canales y Puertos Campo Yagüe, José María del (2017). BULLDOZER: MAQUINARIA DE CONSTRUCCIÓN. Madrid: Ibergarceta Campo Yagüe, José María del (2017). CARGADORAS: MAQUINARIA DE CONSTRUCCIÓN. Madrid: garceta Campo Yagüe, José María del (2017). MAQUINARIA DE CONSTRUCCIÓN: MOTONIVELADORAS. Madrid: Garceta
Complementary	



Recommendations
Subjects that it is recommended to have taken before
Facilities III/670G01035 Building Facilities III and Urban Facilities/670G01132 Construction V/670G01126 Foundations and Geotechnics/670G01121 Construction III/670G01122 Building Facilities II/670G01123 Construction IV/670G01125 Construction II/670G01115 Construction I/670G01106 Building Structures II/670G01111 Building Facilities I/670G01112 Mechanical Basics of Building Structures/670G01104 Building Structures I/670G01107
Subjects that are recommended to be taken simultaneously
Subjects that continue the syllabus
Other comments

(*)The teaching guide is the document in which the URV publishes the information about all its courses. It is a public document and cannot be modified. Only in exceptional cases can it be revised by the competent agent or duly revised so that it is in line with current legislation.