UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Ingegneria
ACADEMIC YEAR	2016/2017
BACHELOR'S DEGREE (BSC)	BIOMEDICAL ENGINEERING
SUBJECT	COMPUTER AIDED DESIGN
TYPE OF EDUCATIONAL ACTIVITY	B
AMBIT	50302-Ingegneria meccanica
CODE	02605
SCIENTIFIC SECTOR(S)	ING-IND/15
HEAD PROFESSOR(S)	INGRASSIA TOMMASO Professore Ordinario Univ. di PALERMO
OTHER PROFESSOR(S)	
CREDITS	9
INDIVIDUAL STUDY (Hrs)	144
COURSE ACTIVITY (Hrs)	81
PROPAEDEUTICAL SUBJECTS	
MUTUALIZATION	
YEAR	1
TERM (SEMESTER)	1° semester
ATTENDANCE	Not mandatory
EVALUATION	Out of 30
TEACHER OFFICE HOURS	**INGRASSIA TOMMASO** Wednesday 10:00 12:00 Il ricevimento avviene, previa prenotazione, presso l'ufficio del docente sito al 1° piano dell'edificio 8 - Dipartimento di Ingegneria.

DOCENTE: Prof. TOMMASO INGRASSIA

PREREQUISITES	Basic knowledge of mathematics, trigonometry and physics.
LEARNING OUTCOMES	Knowledge and understanding: Students, at the end of the course, will be able to understand technical drawings made according to offical standardization rules. Moreover, they will have a good knowledge about the representation and the dimensioning of single parts and assembled systems, and knowledge about main joining methods. Applying knowledge and understanding: Students will be able to make, also using computer tools, 2D and 3D models of single parts and assemblies. They will have skills in research and reading of technical standards and will be able to find the necessary information to correctly represent single parts and assemblies. Making judgements: Students will be able to understand the correct functioning of the represented components and to use the more appropriate modeling and representation methodologies. Communication skills: Students,thanks to the numerous practical exercises made during the course, will be able to communicate all the issues concerning the technical modeling methods and the components assembling. They will be able to hold conversations on CAD modeling, representation techniques and graphic communication. Learning skills: Students, at the end of the course, will have learned the functioning of complex systems and the related techniques of representation and modeling, fundamental part of a modern design process, and that will allow them to continue his engineering studies with greater autonomy and discernment.
ASSESSMENT METHODS	Final examination is structured in three parts: a practical (computer-based), a written and an oral test. The computer-based practical test allows to evaluate the ability of the student to represent, according to the technical rules, simple components joined each other. Maximum test duration: three hours. The written test is composed at least of six multiple choice questions. The aim is to evaluate the knowledge of the main arguments and the communicative skill. Maximum test duration: half an hour. During the oral test, at least two questions, one of which is aimed to clarify the issues of the graphic and written tests, will be asked. The aim is to evaluate the mastery of the skills and disciplinary knowledge of the course as well as the language skill and the capability of analysis and application of knowledge. The oral test is optional if the practical and written tests have been evaluated positively and if the student has presented during the course at least 70% of the assigned exercises. Evaluation Criteria Rating: Excellent; mark: 30-30/L; Outcome: excellent knowledge of all arguments, excellent communication skill, good analytical ability, the student is able to apply knowledge to solve the proposed problems Rating: Very good; mark: 27<29; Outcome: good mastery of all arguments, good communication skill, the student is able to apply knowledge to solve the proposed problems Rating: Good; mark: 24<26; Outcome: basic knowledge of the main arguments, discrete communication skill, with limited ability to independently apply the knowledge to the solution of the proposed problems Rating: Satisfactory; mark: 21<23; Outcome: not full mastery, but low knowledge, of the main arguments, satisfactory communication skill, poor ability to independently apply the acquired knowledge Rating: Adequate; mark: 18 <20; Outcome: minimal basic knowledge of the main arguments and of the technical language, very poor or no ability to independently apply the acquired knowledge Rating: Insufficient; mark: <= 17; Outcome: inadequate knowledge of the contents of the arguments of the course
EDUCATIONAL OBJECTIVES	Students, at the end of the course, will know the problems concerning the representation and dimensioning of individual parts or assemblies. They will know how to join different elements of an assembly. Students will be able to make, also using commercial software, the drawing of single parts and assemblies and to understand the correct functioning. These skills will be subsequently used for the correct setting of a representation problem. During the course, in fact, students will be involved in solving problems according to modern design criteria, thus exploiting the more appropriate computer aids for a given problem.

TEACHING METHODS	Lectures in the classroom, practical exercises in laboratory.
SUGGESTED BIBLIOGRAPHY	CHIRONE - TORNINCASA, Disegno tecnico industriale, voll. I-II, Ed. Il Capitello, Torino. Norme UNI – Disegno Tecnico: Principi e applicazioni generali di disegno meccanico e industriale; organi meccanici; specificazioni dimensionali e geometriche di disegno meccanico e industriale; schemi simboli e tolleranze di disegno meccanico e industriale; UNI, Milano, Dispense e lucidi forniti dal docente.

SYLLABUS

Hrs	Frontal teaching
2	Overview: technical drawing; general rules and tools for technical drawing; use and application of standardized lines.
7	Graphical projections: parallel (orthogographic and oblique) projections; Monge ortogographic projection method. First angle (european) orthographic projection method.
6	Sectional views: section mode, section lines and patterns, standards.
4	Standards and main systems of dimensioning.
4	Intersections of surfaces and solids.
3	Dimensional tolerancing
10	Introduction to joints and classification. Threaded and welded joints.
3	CAD modeling

Hrs	Practice
6	Graphical projections: parallel (orthogographic and oblique) projections; Monge ortogographic projection method. First angle (european) orthographic projection method.
9	Sectional views: section mode, section lines and patterns, standards.
3	Standards and main systems of dimensioning.
4	ntersections of surfaces and solids.
2	Dimensional tolerancing: numerical examples.
3	Joinining of components
6	Assemblies representation: orthographic and sectional views; dimensioning.