UNIVERSITÀ DI PISA

INDUSTRIAL TECHNICAL DRAWING

MAURIZIO BERRETTA

Anno accademico	2022/23
CdS	ENERGY ENGINEERING
Codice	978II
CFU	6

Moduli	Settore/i	Tipo	Ore	Docente/i
DISEGNO TECNICO INDUSTRIALE	ING-IND/15	LEZIONI	60	MAURIZIO BERRETTA

Learning outcomes

Knowledge

At the end of the course: The student will have acquired knowledge about the theoretical, regulatory and technical tools to read and execute a technical drawing The student will have acquired knowledge to identify the most common elements of machines with reference to the ISO and UNI standards.

Assessment criteria of knowledge

To ascertain knowledge, weekly exercises will be carried out under the supervision of the teacher or any co-teachers The assessment of knowledge will be the subject of the evaluation of the written paper at the beginning of each exam session

Skills

At the end of the course: The student must be able to read a simple assembly drawing, recognizing the shape and function of the various details within it. The student must be able to perform the drawing in orthogonal projections of a particular extract from an assembly by performing a correct dimensioning of the same.

Assessment criteria of skills

During the hours of practice the student will have to independently carry out the exercises proposed by the teacher.

Behaviors

The student will be able to acquire and develop the ability to understand the functioning of mechanisms, devices, machinery by reading a technical drawing

Assessment criteria of behaviors

During the hours of practice, the student's level of learning will be assessed by correcting the completed papers

Prerequisites

No particular prerequisites are required, except for a knowledge of elementary geometry Methodological indications

Teaching methods

online lessons with the help of slides online exercises with the support of the teacher and any co-teachers use of the e-learning site of the course for the acquisition of teaching material, teacher-student communications, proposal of additional exercises to be carried out at home use of receptions, whose timetable is established at the beginning of the course based on the timetable of the lessons attendance of the course, although not compulsory, is strongly recommended

Syllabus

Role and evolution of technical communication in the design and development cycle of industrial products. Standardization and regulation in industrial design. Main rules of technical drawing. Unification criteria. Projection methods. Classification, choice and representation of views and sections. Creation of the inscription box. The functional and technological dimensioning. The arrangement of quotas and related regulations. The dimensioning systems. Outline of the main manufacturing processes. Dimensional tolerances. The tolerance system according to the ISO standard. The bore-base and shaft-base connections. Surface finish, roughness and its indication in the drawing. Classification and representation of mechanical connections. Removable connections: thread systems and their designation. Elements of bolts, representation of threaded connections; anti-unscrewing devices. Hub shaft connections. Keys, tabs and grooved profiles. Non-removable connections: welds. Outline of power transmission by gear wheels and relative representation according to the regulations. Supports: representation and classification of plain bearings and rolling bearings.

Bibliography

Bibliography and didactic material S. Barone, A. Paoli, A.V. Rational, M. Berretta, "Industrial Technical Design". Città Studi Editions, 2020, pp. 338, ISBN: 9788825174328 E. Chirone, S. Tornincasa, “Industrial Technical Design”, Vol. 1 and 2, Il Capitello Edizioni.

Non-attending students info

There are no differences for non-attending students in terms of program or modality

Notes

Exam methods The exam consists of a written test and an oral test to be carried out within the same session The written test (lasting about 3 hours), which can be accessed upon registration through the EVALUATE portal, takes place in a drawing room and consists of solving several exercises (usually from 3 to 4) of a mainly graphic type. For the resolution of some types of exercises it is possible to use the didactic material. The written test is evaluated with a mark out of thirty and is considered passed, allowing access to the oral test, if the student obtains a score of not less than 15/30 ("insufficient" rating). the oral exam (about 30 minutes) consists of an interview between the student and the teacher (or co-teacher) on the topics covered during the course. The oral exam is considered passed if the student proves to be able to express himself clearly, correctly and by adopting the appropriate terminology in relation to the questions posed. It is possible that even during the oral exam the student may be asked to solve small questions to be solved in front of the commission. In the case of a sufficient oral test, the student will receive an overall evaluation which also takes into account the outcome of the written test. In case of insufficient oral exam, the student will have to repeat the exam again, including the written exam. There is a maximum limit of 4 deliveries of the written test during the calendar year.

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