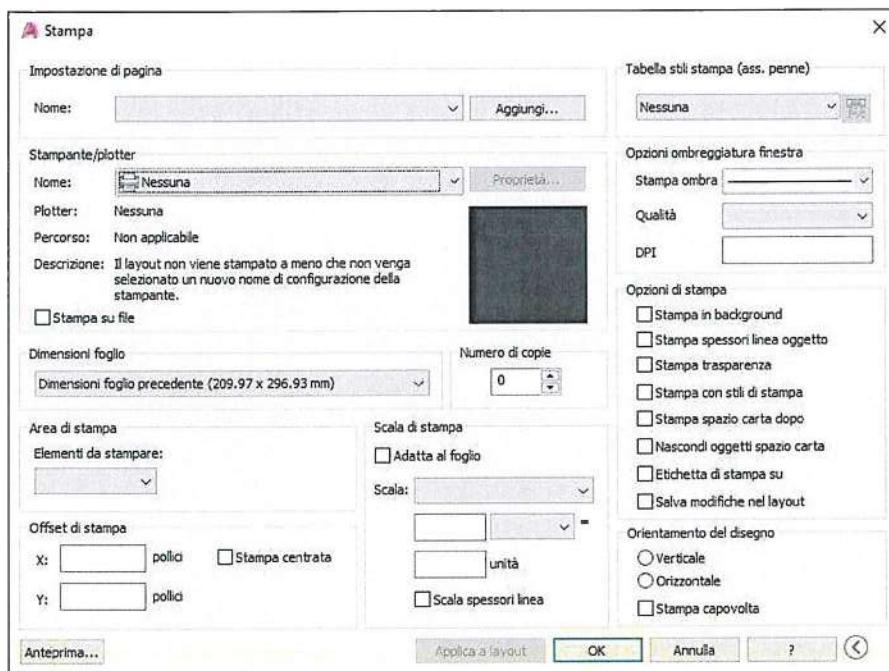


## BUSTA 1

1. Principi di illuminotecnica. Grandezze fotometriche, tipi di sorgenti luminose, temperatura di colore. Illuminazione di ambienti interni ed esterni.
2. Le Unità di trattamento Aria (UTA). Quali sono i principali componenti delle UTA.
3. Ambiente Autocad: definire l'utilizzo della finestra rappresentata qui sotto



4. Ambiente Excel: il comando *proteggi foglio* e *proteggi cartella di lavoro*.
5. Che cos'è l'attestazione SOA?

### **Museum of nature and Humankind**

This new museum will be the main enduring legacy left to the city by the University's 800<sup>th</sup> anniversary celebrations. It will be housed in the magnificent **Palazzo Cavalli**, and will include the vast naturalistic collections assembled over the centuries by scholars and explorers of the University of Padua.

This large interdisciplinary, interactive and multimedia scientific Museum, on three exhibition floors, starting from the magnificent Sala delle Palme (Hall of the Palms), will show how the Earth is a complex system of physical, chemical and biological relations in which humanity plays an integral role.

It will be a dynamic laboratory of knowledge, which will present a story written in rocks, fossils, adaptations of animals and in the thousand-year-old artefacts of humanity. Our planetary history began more than four billion years ago and is now entering an unprecedented phase in which a single species, *Homo sapiens*, has become able to deeply alter all the ecosystems.

In the narration of the Museum, the geographical and the physical space will interweave with the multiple dimensions of time: from Cosmic Time, related to the history of the universe, to Geological Time, namely the time passed between the Earth's formation to our days, until the time of human events ("Anthropocene"). It is only by learning to read the phenomena through the different timescales that we can fully understand the challenge of environmental sustainability, which, from safeguarding biodiversity to the use of georesources, will be another underlying theme of the Museum.

## BUSTA 2

1. Interruttore differenziale: principio di funzionamento, applicazioni, tipologie. Concetto di selettività.

2. Recuperatori di calore. Descrizione e tipologie di recuperatori di calore.

3. Nella seguente tabella sono elencati gli importi delle fatture dell'energia elettrica di alcuni edifici.

Indicare la formula per calcolare l'importo totale da pagare per l'EDIFICIO D nei 6 mesi.

Indicare la formula per calcolare quale edificio presenta l'importo massimo da pagare nel mese di marzo 2021.

	A	B	C	D	E	F	G	H
1	Fatture	gen-21	feb-21	mar-21	apr-21	mag-21	giu-21	
2	Edificio A	560 €	700 €	495 €	640 €	690 €	450 €	
3	Edificio B	1.550 €	1.800 €	1.600 €	1.450 €	1.500 €	1.200 €	
4	Edificio C	450 €	510 €	480 €	370 €	320 €	350 €	
5	Edificio D	230 €	360 €	400 €	280 €	250 €	390 €	
6	Edificio E	2.400 €	1.900 €	1.650 €	2.100 €	1.800 €	2.350 €	
7	Edificio F	720 €	690 €	500 €	710 €	550 €	350 €	
8	Edificio G	560 €	700 €	495 €	640 €	690 €	450 €	
9	Edificio H	1.750 €	1.890 €	1.630 €	1.490 €	1.700 €	1.960 €	
10	Edificio I	200 €	180 €	350 €	490 €	250 €	310 €	
11	Edificio J	1.550 €	1.800 €	1.600 €	1.450 €	1.500 €	1.200 €	
12	Edificio K	230 €	360 €	400 €	280 €	250 €	390 €	
13								
..								

4. Ambiente Autocad: comandi *Testom* e *Riga singola*

5. Cosa sono le soglie di rilevanza comunitaria previste dal Codice degli Appalti (D.Lgs. 50/2016)

# BUSTA 2

## A brief history of the Department of Information Engineering

The Department of Information Engineering - DEI was formed by staff originally based at the Institute of Electrical and Electronics Engineers.

The courses for the Laurea Degree of Industrial Electrical Engineering were first taught in Padova in 1928.

A new building was constructed in Via Gradenigo, partially located in the old Orto Agrario, and in 1966 the Institute of Electrical and Electronic Engineering moved there.

Since the 1950s, research and teaching activities have mainly been devoted to Electrical Engineering.

The Department coordinates the administrative and technical support staff; promotes and supervises research activities in several areas; oversees the Ph.D. School on Information Engineering. The Department is one of the highest earners of income for the University.

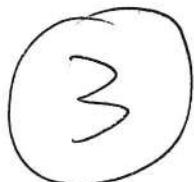
The Department disseminates scientific and technical knowledge through Department colloquia (weekly seminars held by its researchers), guest seminars (taught by guest researchers from outside the Department) and distinguished lectures by internationally recognized researchers from the Information Engineering areas. The importance of the Department's research activity is also well documented by several important publications and a number of patents.

### **BUSTA 3**

1. Cabine elettriche di distribuzione secondaria MT/bt
2. Pompe di calore. Principi di funzionamento, parametri prestazionali e principali limiti tecnici.
3. L'Università di Padova è proprietaria degli edifici elencati nella tabella seguente, nella quale sono scritti gli importi delle fatture dei consumi di acqua per i diversi fabbricati.  
Indicare la formula per calcolare l'importo totale pagato dall'Università nel mese di maggio 2021.  
Indicare il modo per selezionare gli edifici e i mesi per cui l'importo pagato è superiore a 1.000€.

	A	B	C	D	E	F	G	H
1	Fatture	gen-21	feb-21	mar-21	apr-21	mag-21	giu-21	
2	Edificio A	560 €	700 €	495 €	640 €	690 €	450 €	
3	Edificio B	1.550 €	1.800 €	1.600 €	1.450 €	1.500 €	1.200 €	
4	Edificio C	450 €	510 €	480 €	370 €	320 €	350 €	
5	Edificio D	230 €	360 €	400 €	280 €	250 €	390 €	
6	Edificio E	2.400 €	1.900 €	1.650 €	2.100 €	1.800 €	2.350 €	
7	Edificio F	720 €	690 €	500 €	710 €	550 €	350 €	
8	Edificio G	560 €	700 €	495 €	640 €	690 €	450 €	
9	Edificio H	1.750 €	1.890 €	1.630 €	1.490 €	1.700 €	1.960 €	
10	Edificio I	200 €	180 €	350 €	490 €	250 €	310 €	
11	Edificio J	1.550 €	1.800 €	1.600 €	1.450 €	1.500 €	1.200 €	
12	Edificio K	230 €	360 €	400 €	280 €	250 €	390 €	
13								

4. Ambiente Autocad: i blocchi
5. Che cos'è il POS e quali sono i suoi contenuti.



### The University of Padua

The University of Padova, one of the most ancient and prestigious in the world and number one in Italy for the quality of its research results (ranking by the National Research Assessment Committee), dates back to 1222, and, thanks to the total freedom of thought in study and teaching it has consistently granted its students and faculty, it has always been a workshop of new ideas and the home of personalities who changed the cultural and scientific history of humanity. These include: Erasmus of Rotterdam, Nicolaus Copernicus, the father of modern astronomy, Andreas Vesalius, the founder of modern human anatomy, Galileo Galilei, the father of modern science, who taught in Padova from 1592 to 1610, and Elena Lucrezia Cornaro Piscopia, the first woman in the world to obtain a degree (in 1678). Today Padova is a large multidisciplinary University which aims to provide its 61,000 students with both professional training and a solid cultural background.

Programmes are constantly updated in order to meet the ever-changing needs of the contemporary world, and a qualification from the University of Padova means having achieved an ambitious objective, recognised and valued in the labour market. The University participates in various EU-funded international projects, as well as in the "Ciência sem Fronteiras" programme of the Brazilian Government and the Italy-China "Marco Polo" project.

## BUSTA 4

1. Impianti di messa a terra. Funzione, componenti principali. Verifiche periodiche.
2. Efficientamento energetico. Si ipotizzi un impianto centralizzato idronico a colonne montanti con un generatore costituito da una caldaia a metano, terminali di emissioni costituiti da fancoil e regolazione basata su una curva climatica preimpostata. Il candidato illustri alcuni possibili interventi di riqualificazione energetica dell'impianto esistente.
3. Ambiente Autocad: i layer
4. Nella seguente tabella, la colonna C deve contenere i prezzi della colonna B comprensivi del 22% di IVA. Indicare la formula per completare la tabella.

1	A	B Prezzo	C Prezzo comprensivo di IVA
2	P1	560,00 €	
3	P2	1.550,00 €	
4	P3	450,00 €	
5	P4	230,00 €	
6	P5	2.400,00 €	
7	P6	720,00 €	
8	P7	560,00 €	
9	P8	1.750,00 €	
10	P9	200,00 €	
11	P10	1.550,00 €	
12	P11	230,00 €	
13			

5. Le tipologie di procedure per l'affidamento dei lavori secondo il D.Lgs. 50/2016.



## The School of Engineering

Founded in 1876, the School of Engineering of the University of Padova is one of Italy's largest, with over 11,000 registered students, as well as being a leading institution in terms of teaching and research quality. It offers 12 Bachelor's, 19 Master's and 9 Ph.D. Degree Programmes, as well as International Summer and Winter Schools in the areas of Architectural, Civil, Environmental, Industrial and Information Engineering. It is member of the T.I.M.E. network, gathering 53 of the world's leading Technical Universities and Engineering Schools, and promoting academic excellence and relevance to the international labour market in the form of Double Degrees in Engineering and related fields. The School has its own team in the Formula SAE, an international student car design and racing competition, and its students have been awarded the first prize for "Business Plan" on the Hockenheim circuit (2009 and 2014), the first prize for "Acceleration" (2013) on the Silverstone circuit, as well as the first prize for "Skidpad" (2015) and "Engineering Design" (2016).

First-cycle degree courses (Laurea) provide students with basic theoretical preparation and an adequate command of general scientific methods and contents, in addition to the acquisition of specific professional know-how.

Second-cycle degree courses (Laurea magistrale) are open to graduates with a first-cycle or foreign equivalent degree and require a further 120 ECTS credits, which can be accumulated over an average of 2 years. Previous specific curricula in the first cycle are required for admission.

## BUSTA 5

1. Interruttore magnetotermico e interruttore sezionatore: principio di funzionamento, applicazioni, tipologie.
2. Manutenzione degli impianti termici. Il candidato illustri la documentazione obbligatoria ed i principali controlli tecnici previsti dalla normativa di settore in merito agli impianti di generazione termica.
3. Dare indicazioni per la stampa della seguente tabella contenuta in un foglio Excel, in un foglio formato A4 con l'intestazione "Edifici area Nord-Piovego" e il numero di pagina affiancato dalla scritta "Università degli Studi di Padova".

	A	B	C	D	E	F	G	H
1	Fatture	gen-21	feb-21	mar-21	apr-21	mag-21	giu-21	
2	Edificio A	560 €	700 €	495 €	640 €	690 €	450 €	
3	Edificio B	1.550 €	1.800 €	1.600 €	1.450 €	1.500 €	1.200 €	
4	Edificio C	450 €	510 €	480 €	370 €	320 €	350 €	
5	Edificio D	230 €	360 €	400 €	280 €	250 €	390 €	
6	Edificio E	2.400 €	1.900 €	1.650 €	2.100 €	1.800 €	2.350 €	
7	Edificio F	720 €	690 €	500 €	710 €	550 €	350 €	
8	Edificio G	560 €	700 €	495 €	640 €	690 €	450 €	
9	Edificio H	1.750 €	1.890 €	1.630 €	1.490 €	1.700 €	1.960 €	
10	Edificio I	200 €	180 €	350 €	490 €	250 €	310 €	
11	Edificio J	1.550 €	1.800 €	1.600 €	1.450 €	1.500 €	1.200 €	
12	Edificio K	230 €	360 €	400 €	280 €	250 €	390 €	
13								

4. Ambiente Autocad: il comando *Tratteggio*
5. Che cos'è il PSC e quali sono i suoi contenuti.

5

### The Department of Mathematics

The Department of Mathematics of the University of Padua is named after Tullio Levi-Civita, formerly a student and later a professor at the University of Padua. The department hosts around 120 faculties, 50 PhD students and over 30 postdocs, both in Mathematics and in Computer Science, and benefits from the constant presence of several visiting scholars from all over the world.

It is one of the largest and most prominent departments in Italy in the areas of Mathematics and Computer Science. It combines in the same community and in the same building researchers who are active at a high level in almost all areas of the two disciplines.

The department organizes bachelor and master programs in Mathematics and Computer Science and a master program in Data Science, and is a member of the international network "ALGANT". The students' population consists of about 1500 people. Furthermore, the department provides almost all the basic courses in mathematics for over 10000 students from the entire University.

The department promotes an intensive exchange activity of international scholars and students, and is active in the organization of international conferences, in innovative teaching and video lectures, continuing education for teachers, and popularization. Furthermore, the department supports the collaboration with research institutes and industrial partners.

## **BUSTA 6**

1. Continuità di servizio negli impianti elettrici. Gruppo elettrogeno e UPS.
2. Fonti di energia rinnovabili. Il candidato illustri quali sono le possibili soluzioni tecnologiche integrative agli attuali impianti di produzione di energia termica (caldaie a gas metano e pompe di calore).
3. Ambiente Autocad. Dare indicazioni per quotare la parte di edificio rappresentata in figura.



4. I prezzi totali della colonna C sono ottenuti sommando ai prezzi della colonna B “le spese generali e gli utili di impresa” (cella B14). Indicare la/e formula/e per completare la colonna C della seguente tabella.

	A	B	C
1		Prezzo	Prezzo totale
2	P1	560,00 €	
3	P2	1.550,00 €	
4	P3	450,00 €	
5	P4	230,00 €	
6	P5	2.400,00 €	
7	P6	720,00 €	
8	P7	560,00 €	
9	P8	1.750,00 €	
10	P9	200,00 €	
11	P10	1.550,00 €	
12	P11	230,00 €	
13			
14	Spese generali e utili d'impresa	25%	

5. Che cos'è il fascicolo d'opera e quali sono i suoi contenuti.

## **Department of Industrial Engineering**

The Department promotes and manages scientific and technological research projects in all fields of industrial engineering, including aerospace engineering, chemical and process engineering, electrical engineering, energy engineering, and materials and mechanical engineering, as well as industrial technology transfer initiatives.

All the Department's activities aim at reaching international levels of research excellence by an interdisciplinary approach. The Industrial branch or Engineering is focused on activities, processes, components, materials and machines commonly associated with industry, but it has recently extended to other areas of application, such as service companies, public and private bodies and research centres. It is the most variegated area of Engineering, divided into the following homogeneous sub-areas: Mechanics, Chemistry, Electronics and Management and Business Processes. Within these sub-areas it is possible to identify further advanced and innovative sectors (Materials, Aerospace, Energy, Industrial Safety, Product Innovation, Mechatronics Operations). The Industrial Engineer's educational path provides high-level competencies, suitable for the study and development of an extremely wide range of applications; from the synthesis of new compounds and materials, at the molecular scale, to the design of satellites and large plants, to the manufacturing and energy production industries, passing by many products of daily use, such as automobiles, mechanical and electrical components, engines, machinery and many more.