



INVITATION TO APPLY FOR SELECTIVE EXAMINATIONS TO FILL STAFF POSITIONS WITH THE COMISION NACIONAL DEL MERCADO DE VALORES (SPAIN'S NATIONAL SECURITIES MARKET COMMISSION, THE CNMV). TECHNICIANS (DATA ANALYSTS) FOR VARIOUS DIVISIONS AND DEPARTMENTS OF THE CNMV

05/21

The positions to be filled in this invitation result from Royal Decree 636/2021 of 27 July approving the Offer of Public Employment for the year 2021

This selection procedure will adhere to the principle of equal treatment of men and women as regards access to employment, pursuant to Article 14 of the Spanish Constitution, Organic Law 3/2007 of 22 March and the Resolution of the Council of Ministers of 9 December 2020 approving the third plan for Gender Equality in the General State Administration and its associated or dependent Public Bodies, and will be governed by the following:

## RULES

### ONE.- Positions

- 1.- A selection process has been created to cover the positions shown below using the general system of free access to the CNMV, with the following categories, annual gross salaries, and work locations:

<u>No.</u>	<u>Job category</u>	<u>Gross annual salary</u>	<u>Town/city</u>
5	Technician, level 7	36.934,52 Euros	Madrid

- 2.- The employment contract will be indefinite.
- 3.- Incompatibilities relating to the performance of the job will be governed by Law 53/1984 of 26 December and complementary provisions.
- 4.- The CNMV is the body responsible for the supervision and inspection of Spanish securities markets and the activity of all participants in these markets. The aim of the CNMV is to ensure the transparency of the Spanish securities markets and appropriate price formation as well as to protect investors.



For the CNMV, improving data processing and analysis capabilities is a key dimension for the evolution and improvement of financial market supervision techniques. The CNMV's strategy calls for greater use of data in supervisory functions and this requires supervisory teams to have the necessary data analysis skills.

In line with the above, the CNMV has internally created some data analyst positions in recent years, in a decentralised manner, in several of the various general directorates. However, this is the first time that the CNMV has issued a specific public invitation to competitive examinations for applicants with this kind of profile.

The data analysts will join the technical teams of each of the CNMV departments to which they are assigned. Their function will consist of complementing the supervision teams, designing and implementing procedures to improve and promote the advanced exploitation of data in the CNMV. Although the creation of a central data analysis department is not foreseen at the moment, there will be internal coordination mechanisms so that all data analysts, regardless of which department they are located in, remain technically coordinated, have access to specific training and coordinate the methods and techniques used.

Among other projects, they may participate in one or more of the following:

- Development of advanced algorithms to identify price manipulation patterns in accordance with market abuse regulations.
- Supervision of the activity through social networks of "insiders" or people who issue investment recommendations, through web scraping and NLP.
- Detection through web scraping of investment offers by unauthorised entities or potentially fraudulent offers.
- Medium-term improvement of the alert processes on the activity of the markets and central counterparties, as well as the detection of error patterns in the reporting of transactions with financial instruments to make them more efficient through the use of artificial intelligence/automatic learning techniques.
- Mass exploitation of structured and unstructured information. Maintenance of data quality, support for the preparation of analyses or studies, use of Business Intelligence tools and techniques



- 5.- The requirements set out in the invitation and all the actions involved in its execution will be published on the CNMV website (<http://www.cnmv.es/portal/quees/Ofertas/empleo.aspx?lang=en>) and the General Access Point (<https://administración.gob.es>)

## **TWO.- Applicants**

To be eligible for the selective examinations, applicants must meet the following conditions at the cut-off date for the submission of applications and continue to meet them until the contract has been signed:

### 1.1. Nationality:

- a) Spanish nationals.
- b) Nationals from other European Union Member State or of a State from and to which free movement of workers has been agreed in international treaties entered into by the European Union and ratified by Spain.
- c) The spouses of Spanish and other European Union Member State nationals may also apply irrespective of their nationality provided that they are not legally separated. Children of the above who are under twenty-one years of age or over if dependent and those of their spouse may participate under the same conditions.
- d) Any person not included in the preceding paragraphs who is legally resident in Spain may also apply.

1.2-Applicants must be at least 16 years old and not older than any maximum mandatory retirement age that may be in force.

1.3.- They must have the functional capacity to carry out the tasks involved.

1.4.- They must not have been dismissed following a disciplinary process from any Public Administration or any Constitutional or Statutory Body of the Autonomous Regions of Spain, nor be definitively or specifically disbarred from holding public office or employment by judicial resolution.

Foreign nationals must not have been disqualified or be in an equivalent situation, or have been subject to disciplinary action or equivalent which prevents their access to public employment under the same terms in their home country.

- 1.5.- They must hold a degree (Graduate, Engineer, Architect, or Bachelor's degree) or have met the conditions to be awarded one before the closing date of the application process. Candidates holding degrees obtained abroad must have the corresponding certificate of accreditation (*credencial de homologación*) or, where applicable, the certificate of equivalence (*certificado de equivalencia*). This requirement does not apply to applicants who have obtained recognition of their professional qualifications in a regulated profession pursuant to European Community Law.
- 1.6.- Should any of the applicants not be able to complete the selection process or carry out any exercise of the same because of a duly accredited situation of risky pregnancy or childbirth, their situation will be conditional on completion of the process and to the passing the phases that have been postponed.

The performance of these examinations may not entail a delay that undermines the right of the rest of the applicants to a resolution of the process within a reasonable time, which will be assessed by the panel. In any case, the aforementioned examinations will take place before the publication of the list of applicants who have passed the selection process.

### **THREE.- Submission of applications**

1. Persons wishing to take part in these selective examinations must send the documentation set out in the last paragraph of this point, addressed to the General Secretary of the CNMV. In accordance with the First Additional Provision of Royal Decree 203/2021 of 30 March approving the Regulations for the action and operation of the public sector by electronic means, all procedures relating to this procedure will be carried out electronically, specifically through the electronic office of the CNMV (<https://sede.cnmv.gob.es/SedeCNMV/SedeElectronica.aspx?lang=en>) using the electronic signature systems provided in Royal Decree 203/2021, following the established instructions ([http://www.cnmv.es/DocPortal/Ofertas/Firma-Envio-Sede\\_en.pdf](http://www.cnmv.es/DocPortal/Ofertas/Firma-Envio-Sede_en.pdf)) or using the remaining electronic records of any of the subjects referred to in Article 2.1. of Law 39/2015.

If any applications are submitted in person, the applicant will be required to represent it electronically under the terms of Article 14 of Royal Decree 203/2021 of 30 March. Consequently, the filing date of the application will be considered to be that on which the electronic presentation is made according to the procedure established for the presentation of applications through the electronic office.



If a duly accredited technical incident makes the ordinary operation of the systems impossible, the convening body may agree to extend the deadline for submitting applications or to approve an alternative means of completing and submitting them, which it will publish on the CNMV's website (<http://www.cnmv.es/portal/quees/Ofertas/empleo.aspx?lang=en>).

In the event of a technical incident occurring during the registration process, applicants should access CNMV's electronic platform, or contact its Helpline on 902 180 772, or email [sedecnmv@cnmv.es](mailto:sedecnmv@cnmv.es) (these channels are exclusively used to advise electronic platform and registry users on computer matters, not for sending documents).

Should applicants not be able to complete registration and the selection process from abroad electronically, they may present it at the nearest Spanish embassy or consulate.

Notifications will be sent electronically by email to the address stated on the registration application by the applicant.

Pursuant to Article 12 of Law 39/2015, the CNMV will assist those candidates in the use of electronic means to facilitate their participation in the invitation if they need it. For any questions related to the application and/or electronic signature, candidates may contact the Electronic Office User Service on the CNMV's electronic platform by phoning 902 180 772, or via email at [sedecnmv@cnmv.es](mailto:sedecnmv@cnmv.es) (these channels are exclusively used to advise electronic platform and registry users on computer matters, not for sending documents).

The instructions above may be supplemented by those that appear in the CNMV's electronic office.

In any event, only the communication made by the applicants sent by the notification and publication method set forth herein will have legal effects, pursuant to the procedure established for the electronic submission of applications via the CNMV electronic office.

The documentation to be presented is the following:

- Curriculum vitae in Europass format or similar (<http://europass.cedefop.europa.eu> and [www.coe.int/portfolio](http://www.coe.int/portfolio)). The activities carried out by the applicant as well as the exact periods during

which these activities were performed must be described in as much detail as possible.

- Application form as attached to this document.
  - Certified copy of academic qualifications required for the position. Applicants with qualifications obtained abroad must submit the corresponding accreditation or certificate of official approval.
  - Employment history record updated to the date of filing of applications issued by the Social Security's General Treasury.
  - Certificate of Services Rendered issued by the corresponding personnel unit when the professional experience was gained from services provided in the Public Sector.
2. Applicants included in Rule Two, sections 1.1 c) and d) on Nationality, must enclose the documents accrediting their status with their application.
  3. Applicants with a level of disability of 33% or more requesting modification of times and formats must enclose the Technical Opinion issued by the Technical Assessment Body as evidence of their disability.
  4. At any time during the selection process, the Selection Panel may request proof of the information contained in the curriculum vitae or in the application.
  5. The deadline for applications is the 28 day of September of 2022.
  6. Applicants who are offered a position will have to provide evidence of the stipulated requirements in accordance with Rule Seven of this document.
  7. Within a maximum of one month of the closing date for applications, the CNMV will publish the date, place, and time for the first part of the open competition phase in its General Register and on its website. This resolution will be published on the CNMV's General Register and on its website (<http://www.cnmv.es/portal/quees/Ofertas/empleo.aspx?lang=en>), where candidates will be able to check to see whether they have been provisionally included or excluded using a code assigned to them by email at the start of the process.
  8. At the same time, the Administrative Information centre will be informed that the list of provisional admissions and exclusions has been published. (<https://administración.gob.es/pagFront/empleoBecas/empleo/buscadorEmpleo.htm>)



9. Excluded candidates will have ten working days, starting from the day following publication of the Resolution, to rectify any omission that may have led to their exclusion.
10. Once the documentation submitted has been analysed and within a maximum period of one month starting from the date of termination of the deadline for the presentation of documentation, to correct it, the definitive list of people admitted to the selection process will be made public in the General Registry of the CNMV and on its website, (<http://www.cnmv.es/portal/quees/Ofertas/empleo.aspx?lang=en> ).
11. The personal data collected in the application for admission will be processed for the sole purpose of managing the selection examinations and the communications necessary for this. The name, surname(s) and number of the identity document will be published in the manner determined by the seventh additional provision of Organic Law 3/2018 of 5 December on the Protection of Personal Data and guarantee of digital rights. The CNMV will take measures so that this information is not indexed by internet search engines.

The legal bases for the processing of these data are Laws 39/2015 of 1 October and 40/2015 of 1 October and the revised text of the Law on the Basic Statute of Public Employees. The General Secretariat of the CNMV is responsible for processing this data and publishes its data protection policy at (<https://cnmv.es/portal/Utilidades/Proteccion-Datos.aspx>). (Scroll down for English.)

The data protection rights of applicants may be exercised by contacting the data controller electronically, through the electronic office of the CNMV or in person through the network of assistance offices in matters of registration. Interested parties may also exercise their rights with the Spanish Data Protection Agency, [www.aepd.es](http://www.aepd.es).

#### **FOUR.- Selection system**

- 1.- The system used for candidate selection will be the open competition system.
- 2.- The open competition will be composed of four parts:
  - 1) First part: English language examination.
  - 2) Second part: written exercise - Questionnaire
  - 3) Third part: written exercise - Problem-solving.



4) Fourth part: oral exercise.

#### **2.1.- First part: English language examination.**

This exercise will be eliminatory.

It will consist of a TOEIC examination (*Test of English for International Communication*), which will be divided into two parts according to the skills that are evaluated. In order to facilitate its completion, a fifteen-minute break will take place between the two parts.

##### 1) Part 1: Listening and Reading

This part has two sections with 100 questions each: the first aims to assess the level of English in terms of oral comprehension (Listening) and the second the written comprehension (Reading).

They are multiple choice questions and only one answer is correct. Unanswered or wrongly answered questions are not penalised.

The maximum score of this examination is 990 points according to TOEIC. A minimum of 785 points (or equivalent in the opinion of the panel) must be obtained, equivalent to level B2 of the Common European Framework of Reference (<http://europass.cedefop.europa.eu> and [www.coe.int/portfolio](http://www.coe.int/portfolio)), to pass.

This first part lasts a maximum of two and a half hours.

##### 2) Part 2: Speaking and Writing

This part consists of two sections:

- The Speaking Section, the purpose of which is to evaluate the capacity for oral expression and interaction, consists of 11 questions.

The maximum score of this examination is 200 points according to TOEIC. A minimum of 160 points (or equivalent in the opinion of the panel) must be obtained, equivalent to level B2 of the Common European Framework of Reference (<http://europass.cedefop.europa.eu> and [www.coe.int/portfolio](http://www.coe.int/portfolio)), to pass.



The duration will be twenty minutes.

- The Writing Section assesses writing ability and consists of eight questions.

The maximum score of this examination is 200 points according to TOEIC. A minimum of 150 points (or equivalent in the opinion of the panel) must be obtained, equivalent to level B2 of the Common European Framework of Reference (<http://europass.cedefop.europa.eu> and [www.coe.int/portfolio](http://www.coe.int/portfolio)), to pass.

The duration is one hour.

The maximum time allocated for the first part is three hours.

It is necessary to obtain the minimum level established in each of the competences, Listening & Reading (785 points), Speaking (160 points) and Writing (150 points), in order to pass the examination.

Candidates who have passed this examination will be assigned the following score:

	Points TOEIC	Points assigned	Points TOEIC	Points assigned
Listening & Reading	Between 785 and 940 points (equivalent to B2)	Zero points	Between 945 and 990 points (equivalent to C1)	2 points.
Speaking	Between 160 and 170 points (equivalent to B2)		Between 180 and 200 points (equivalent to C1)	3 points.
Writing	Between 150 and 170 points (equivalent to B2)		Between 180 and 200 points (equivalent to C1)	3 points.



The Selection Panel will publish the lists of candidates who have achieved the required standard of English in this first part in the General Register of the CNMV and on its website (<http://www.cnmv.es/portal/quees/Ofertas/empleo.aspx?lang=en>) in accordance with paragraph two of this point.

The invitation for this second part will be issued at least 72 hours before it takes place.

### **2.2.- Second part: written exercise - Questionnaire**

This will consist of answering in writing a list of questions in examination format, short questions or a combination of both, and will be about subjects included in Annex I.

The time allocated for this examination will be sixty minutes.

This part will be scored from 0 to 20 points. Candidates who fail to obtain a minimum of 10 points will be eliminated.

Before this second part, the Selection Panel will make the criteria for correcting, assessing and overcoming the same public on the CNMV website, which are not expressly stipulated in the rules of this invitation, and in the case of exercises with alternative answers, the penalty for each wrong answer.

The Selection Panel will publish the list of the scores obtained by candidates who have passed the third part (as described in the paragraph above) in the General Register of the CNMV and on its website (<http://www.cnmv.es/portal/quees/Ofertas/empleo.aspx?lang=en>) and they will be invited to take part in the fourth part at the place, date, and time indicated. The invitation to the third part will be issued at least 72 hours before it takes place.

### **2.3.- Third part: written exercise – Solving exercises.**

This exercise will consist of solving a **Jupyter** notebook on the **Anaconda** platform where a series of practical cases that must be resolved and justified and the development of theoretical questions related to these, referring to the

matters that appear in points 1, 2, 3, 4, 5, 6 and 7 of Annex I, will be presented.

The maximum time allocated for this examination is 3 hours. This part will be scored from 0 to 40 points. Candidates who fail to obtain a minimum of 20 points will be eliminated.

Before this third part, the Selection Panel will publish such criteria for correcting, assessing and passing it as are not expressly stipulated in the rules of this invitation on the CNMV website, and in the case of exercises with alternative answers, the penalty for each wrong answer.

The Selection Panel will publish the list of candidates who have passed this third part in the General Register of the CNMV, and on its website (<http://www.cnmv.es/portal/quees/Ofertas/empleo.aspx?lang=en>), stating the scores obtained by each candidate and they will be invited to take part in the fourth part at the place, date, and time indicated. The call for this fourth part will be issued at least 72 hours before it takes place.

#### **2.4.- Fourth part: oral exercise.**

Candidates will have to read in public, before the Panel, the theme, practical cases, or such theoretical matters as the Panel may indicate from among those covered in the previous exercise.

Following the applicant's reading, the Selection Board will conduct a dialogue with the candidate on aspects of the developed theme, selected questions or practical cases resolved, as well as any other area that helps them to assess whether the candidate has the preparation and professional experience to fill the position described in Rule One Section 4; and to assess the candidate's suitability for the post, initiative and organisational capabilities, oral communication skills and interest in joining the organisation in the aforementioned position. The Selection Panel may require the candidate to explain and respond in English to some of the questions asked.

This examination will be marked from 0 to 40 points, and at least 20 points must be obtained to pass it.

Candidates in each of the two processes will be called to read to the Selection Panel in alphabetical order of surnames, beginning with the letter "U". If no candidate's first surname begins with the letter "U", the Panel will start with



“V”, and so on, as established in the Resolution of the Secretary of State for Public Administration of 9 May 2022 (BOE 13 May 2022).

The Selection Panel will publish the list of candidates who pass this fourth part in the General Register of the CNMV and on its website (<http://www.cnmv.es/portal/quees/Ofertas/empleo.aspx?lang=en>), indicating the score obtained by each.

- 3.- The final score will be determined by the total points obtained in the four parts of the competitive examination.
- 4.- The maximum expected duration of the selection process is six months. The first part of the selection phase described in Rule 4 will be carried out within a maximum period of three months from the publication of the invitation. All this without prejudice to the publication of a resolution that, in a reasoned manner, agrees to the extension of said deadlines.

#### **FIVE.- Allocation of positions**

Once the evaluations of the competition have been completed, the Selection Panel will approve the list of qualified candidates who have passed the selection process, who will be placed in order from highest to lowest score, together with the list of candidates awarded the position whose number may not exceed the number of positions included in the invitation, and will submit it to the convening body for its determination and publication.

If two or more candidates have the same score, the candidate scoring higher in the oral examination and personal interview will be preferred.

#### **SIX.- Selection Panel**

- 1.- The Selection Panel for this selection process is the one that appears in point 3 of this section. For those exercises that require immediate correction, the daily composition of the panel may be three members, appointed by the President.
- 2.- Pursuant to Article 14 of the Spanish Constitution, the Selection Panel shall enforce strict compliance with the principle of gender equality.
- 3.- The Selection Panel and, in its absence, the Alternate Selection Panel, are composed as follows:

a: Selection Panel: the President: José Alberto Toribio Viñuela  
the Secretary: Matilde Barbo Torrado  
Members: Francisco Castellano Cachero  
Enrique Sainz García  
M<sup>a</sup> Jesús Gutiérrez Muñoz

b: Alternate Panel: the President: M<sup>a</sup> Carmen Hidalgo Pérez  
the Secretary: Elsa Sánchez García  
Members: Guillermo Cambronero Pérez  
José Luis Sánchez Rodríguez  
Ana Fernández Arimany

- 4.- Membership of the selection panels will always be on an individual basis, and this cannot be held as a representative or on behalf of someone else.
- 5.- It will correspond the consideration, verification, and appreciation of the incidences that could arise in the development of the exercises to the panel, and will adopt the decisions in this regard that it deems pertinent.
- 6.- The activation procedure of the Selection Panel will be adjusted at all times to the provisions of Law 39/2015 of 1 October for the Common Administrative Procedure of Public Administrations, and especially to the rules for the bodies collegiate in Law 40/2015 of 1 October, for the Legal Regime of the Public Sector, in Law 19/2013 of 9 November for transparency, access to public information, and good governance, and in other current provisions. Their skills will be those necessary for their correct functioning, including the marking of the exercises.
- 7.- The Selection Panel has the power to interpret the rules governing this selection process and resolve any incidents that may arise during the course of the selection examinations.
- 8.- It must record any agreement that affects the determination of the grades awarded for each exercise In the minutes of its meetings and of the exercises held, and will act in accordance with the provisions of Royal Decree 636/2021 of 27 July which approves the public employment offer for the year 2021.
- 9.- If any candidates with disabilities apply for the examinations, the Selection Panel may possibly adapt the format and timing of the examinations at the request of an applicant so that the candidate can take them under normal conditions.

- 10.- The Selection Panel shall be constituted at a meeting attended by its chairperson, its secretary, and at least half its permanent or alternate members. It must be constituted in a maximum of thirty days from being appointed.
- 11.- Once the Selection Panel has been constituted, its resolutions need the presence of a majority of its members, permanent or alternate.
- 12.- In carrying out the various phases of the selection process, the Selection Panel may make use of external technical assistance from specialist advisers if it deems this to be necessary.
- 13.- The Selection Panel will comply with the conditions for abstention and recusal stated in Articles 23 and 24 of Law 40/2015.
- 14.- Where appropriate, the Selection Panel will make public the correction templates of those selection processes that include examinations with alternative answers within a maximum of three days from the end of the specific examination.
- 15.- The Selection Panel will apply principles of austerity and diligence when organising and approving the development of the selection processes.

#### **SEVEN.- Submission of documents**

- 1.- Before formalising the contract, the selected candidates must submit the following documents within a maximum of twenty business days of the publication of their appointment:
  - a) Affidavit or solemn declaration that they have not been dismissed for disciplinary reasons from the service of any of the Public Administrations or Constitutional or Statutory Bodies of the Autonomous Communities, or declared absolutely or specifically disqualified from public office or employment by judicial resolution.
  - b) Declaration that they are not engaged in any other public or private professional activity that might require prior authorisation or recognition of compatibility with public service and that they do not receive any retirement or other pension acquired as a benefit for public service or under any public or mandatory Social Security regime.

- c) Academic degree required to obtain the position. Applicants with qualifications obtained abroad must submit the corresponding accreditation or certificate of official approval.
- d) Official medical certificate confirming that the candidate suffers from no illness or physical or psychological conditions that would make it impossible for them to carry out their functions.
- e) The additional documentation required to formalise the contract for those candidates applying under Rule Two, section d), point 1.1 of this invitation.

In the event that the selected candidate does not submit the documentation stated in Rule Seven of the invitation within the established period and whatever the reason for not submitting it, does not meet the requirements, withdraws, or does not meet the trial period in these rules, the Organising Panel will award the position to the following according to the order of priority defined in the Resolution of the Presidency of the CNMV for which the list of qualified applicants who have passed the selection process is published in accordance with the criteria established in Rule Five of this invitation.

#### **EIGHT.- Trial period and signing of the contract**

- 1.- CNMV staff are subject to the general rules regarding incompatibility of civil servants as well as the specific rules contained in the Internal Regulations of the CNMV and the General Code of Conduct of its members, which, among other things, affect their investments in securities. The application of these rules is explicitly included in the employment contract and the selected candidates will be required to sign these before joining the CNMV.
- 2.- The job will be taken up and started within a maximum period of three months from the publication of the Resolution of the Presidency approving the list of qualified applicants who have passed the selection process and the list of successful applicants.

Once the corresponding contract has been signed, the candidate will join the CNMV within fifteen days of the formal offer issued by the CNMV.

- 3.- The probationary period is six months.
- 4.- At the end of the probationary period, the person selected will become a permanent employee.



### **NINE.- Employment pool**

In accordance with the provisions of Article 3.19 of Royal Decree 636/2021 of 27 July approving the offer of public employment for the year 2021 for the purpose of selecting personnel for the performance of temporary positions in the category of technician, an employment pool will be formed of applicants who have passed at least three of the examinations.

The order of the pool will be established by first taking account of the number of examinations passed. If the same number of examinations has been passed, the scores obtained in them will be totalled. If two or more candidates have the same score, the candidate who scored highest in the oral examination and personal interview will be preferred.

The list of applicants included in the job bank will be made public and will be valid for 24 months from its publication unless a new invitation ends before this.

### **TENTH. - FINAL RULE**

Against this call, an appeal for reversal may be filed, optionally, with the convening authority within a month of its publication, in accordance with the provisions of Law 39/2015 of 1 October on the Common Administrative Procedure of Public Administrations, or a contentious-administrative appeal may be filed with the Central Contentious-Administrative Courts, within two months of its publication, in accordance with the provisions of article 9.1 a) of Law 29/1998 of 13 July regulating the Contentious-Administrative Jurisdiction, meaning that, in case of filing an appeal for reversal, a contentious-administrative appeal may not be filed until it is expressly resolved or the presumed dismissal of the same has occurred.

Madrid on the 07 of September of 2022

CHAIRMAN

Signed: Rodrigo Buenaventura Canino



## APPENDIX I

1. Advanced Python: IPython, os, read/write, if, "loops", functions, exceptions.
2. Jupyter Lab and Jupyter Notebooks.
3. NumPy and Pandas libraries
  - a. I/O operations common formats: CSV, XML, TXT, Excel,
  - b. SQL Queries. Data capture, SQL Server: SQLAlchemy/PyODBC.
  - c. Data transformation: group\_by, merge, concat
4. Data visualisation: Matplotlib/Seaborn/Bokeh, Plotly
5. Machine learning: Scikit-learn
  - a. Dimensionality reduction: PCA, KernelPCA
  - b. Processing: Standardisation, normalisation, treatment of categorical variables and missing values.
  - c. Outlier detection: Isolation forest
  - d. Unsupervised learning: Clustering, K-means, DBSCAN
  - e. Supervised learning: Regression and classification models, linear and nonlinear models, individual and assembled: SVM, decision trees, random forests, boosting methods, etc.
6. Basic web scraping: Requests BeautifulSoup, Regex
7. Basic NLP. BoW, W2V models and RNN theoretical foundations.
8. Analysis-oriented data architectures: Non-relational databases: Key-value, JSON documents, graphs.
9. POWER BI:
  - a. Loading and transforming data in Power Query.
  - b. Data modelling.
  - c. Design and development of KPIs and dashboards.
  - d. Data Storytelling.
10. Data governance: Principles, benefits, roles and data ethics.
11. Unstructured data analytics.
12. Data analysis techniques (neural networks, regression analysis...).
13. Result analysis techniques (predictive statistics, inferential statistics...).