



**CALL FOR APPLICATIONS FOR EU AND EU-EQUATED CITIZENS TO THE ONE-  
CYCLE DEGREE COURSE IN MEDICINE AND SURGERY IN ENGLISH WITH  
LIMITED ACCESS (Class LM-41) AT HUMANITAS UNIVERSITY  
SUMMARY OF THE CALL IN ENGLISH**

**Academic years  
2023/2024 and 2024/2025**

**Foreword**

**The official source of the Call for Applications for EU and EU - equated citizens is “BANDO DI CONCORSO, RISERVATO AI CITTADINI COMUNITARI ED EQUIPARATI, PER L’AMMISSIONE AL CORSO DI LAUREA MAGISTRALE A CICLO UNICO IN MEDICINA E CHIRURGIA (Classe LM-41) IN LINGUA INGLESE DI HUMANITAS UNIVERSITY” in Italian. This document represents a summary of the call.**

**This document is provided for the convenience of International students. In the event of disputes, the parties should refer only to the Italian document.**

**Admittance to the Degree Course is subject to selection through the University’s Admission test.**

**SUMMARY**

**Art. 1 Number of places available**

**Art. 2 Admission requirements**

**2.1 Citizenship Requirements**

**2.2 Educational Requirements**

**Art. 3 HUMAT Admission test**

**Art. 4 Application for the Admission test: deadlines and modalities.**

**4.1 Testing dates and sessions**

**4.2 Delivery of the Admission Test**

**4.3 Required hardware and software**

**4.4 Disconnection from the Admission test: conditions for retaking the test**

**Art. 5 Candidates with special education needs**

**Art. 6 Test Assessment and rankings**

**Art. 7 Publication of the ranking lists**

**Art. 8 Online enrolment and reserve list a.y. 2023/2024**

**Art. 9 Reimbursement of the first instalment**

**Art. 10 Completion of enrolment at Humanitas University**

**Art. 11 Supervision committee and person responsible for the procedure**

**Art. 12 Table of deadlines**

**Art. 13 Additional Training Obligation (OFA test)**

**ANNEX A: Structure of the test**

**Admittance to the Medicine and Surgery Degree Course is subject to selection through the University's Admission test.**

### **Art. 1 Number of places available**

For both the academic years 2023/24 and 2024/2025, the number of places available for EU citizens and EU-equated citizens (as reported in art. 2) is established as **130**.

The number of places available may change in accordance with a later Decree of the Ministry of University and Research (M.U.R.), pursuant to the provisions of Law n. 264, August 2, 1999. The Decree of MUR could confirm, increase, or decrease the number of places available.

### **Art. 2 Admission requirements**

Only candidates holding citizenship and educational requirements reported in this article are entitled to apply.

Only candidates who have also taken and passed the HUMAT admission test (Art. 3) may be admitted to the one-cycle degree course in Medicine and Surgery.

#### **2.1 Citizenship Requirements**

Candidates must meet one of the following requirements:

- Citizens of Italy or of European Union member states.
- Citizens holding a European citizenship together with a citizenship of a country not belonging to the European Union.
- Citizens of Norway, Iceland, Liechtenstein, Switzerland, the Republic of San Marino.
- Non-EU citizens holding a residence permit in Italy for employment or self-employment, for family reasons, political asylum, asylum for humanitarian or religious reasons, or study reasons if regularly enrolled in another Degree Course and permanently residing in Italy from at least one year.
- Non-EU citizens legally resident in Italy for at least one year in possession of a Secondary School Diploma obtained in Italy.
- Non-EU citizens, resident anywhere who hold diplomas from Italian schools abroad or foreign or international schools having bilateral agreements or special regulations for the recognition of qualifications and who satisfy the general conditions required to be admitted to study in Italy.
- Refugees.
- Diplomatic personnel accredited to International Organizations in Italy, Italian State, Vatican State and their dependent family members.

**Candidates applying for and sitting the test without the citizenship requirements will not be considered for the ranking.**

## 2.2 Educational Requirements

Candidates eligible to take part in the admission test are those who, on the date of the test:

- are in possession of a secondary school (High School) diploma or
- are attending the last year of secondary school (High School) and will be graduating in 2023 or
- are attending the second-to-last year of secondary school (High School) and will be graduating in 2024.

For candidates who have obtained/will obtain a High School diploma outside of Italy or in an international secondary school, the diploma is considered valid if obtained after at least 12 years of schooling, in addition to being accompanied by the Declaration of Value issued by the Italian diplomatic authorities.

If the local school system provides for 10 or 11 years of schooling, the title is valid when integrated with one or two years of University, having passed all the required exams for those academic years.

**Candidates not holding valid qualification, according to the requirements of the law, will lose the right to enrol.** If the candidate is already enrolled, the candidate's enrolment will be canceled.

For the validation of foreign qualifications, Humanitas University will follow Ministry guidelines for the academic year 2022-23 available in English at:

[https://www.studiare-in-italia.it/studentistranieri/moduli/2022/Circolare\\_2022\\_2023\\_EN.pdf](https://www.studiare-in-italia.it/studentistranieri/moduli/2022/Circolare_2022_2023_EN.pdf)

### Art. 3 HUMAT Admission test

Only candidates who have taken and passed the HUMAT admission test are admitted to the first year of the one-cycle degree course in Medicine and Surgery.

The test is delivered in two exam rounds per calendar year. Each exam round is organised in several sessions with papers of equal difficulty.

For the academic year 2023/2024, each candidate can take up to a maximum of two sessions, one during the exam round scheduled in February 2023 and one during the exam round scheduled in March 2023.

For the academic year 2024/2025, each candidate can take up to a maximum of four sessions, one during the exam round scheduled in February 2023, one during the exam round scheduled in March 2023 and further two sessions in the calendar year 2024. The dates of 2024 exams will be communicated in the next call for applications.

The ranking lists will be drawn up as specified in Article 6.

The Admission test is conducted entirely in English. Candidates are required to answer sixty (60) multiple choice questions. There will be 4 response options, of which only one is correct. The test is **home-based**, as per the articles which will follow.

Based on the programs listed in Annex A at the end of this document, the questions are divided as follows:

- **Scientific Thinking** (30 questions)
  - Procedural Thinking (10 questions)
  - Mathematical Thinking (10 questions)
  - Visual Thinking (10 questions)
  
- **Academic Literacy** (30 questions)

#### **Art. 4 Application for the Admission test: deadlines and modalities**

The application for the admission test must be completed exclusively online through the University website [www.hunimed.eu](http://www.hunimed.eu). Registration will be open from **October 28<sup>th</sup>, 2022 until 18:00 CET of February 8<sup>th</sup>, 2023**, in order to register for both the first and the second exam rounds. Upon expiry of that period, candidates who register until **March 1<sup>st</sup>, 2023** can exclusively take the exam on the second round.

#### **4.1 Testing dates and sessions**

**The Admission test is home-based and takes place on Thursday 16 and Friday 17 February 2023 (first exam round) and on Thursday 9 and Friday 10 March 2023 (second exam round).**

There are 4 dates for the test and 8 sessions:

##### **1<sup>st</sup> Exam round**

##### **Thursday, February 16<sup>th</sup>**

First Session: at 09:30 CET

Second Session: at 14:30 CET

##### **Friday, February 17<sup>th</sup>**

Third Session: at 9:30 CET

Fourth Session: at 14:30 CET

##### **2<sup>nd</sup> Exam round**

##### **Thursday March 9<sup>th</sup>**

First Session: at 09:30 CET

Second Session: at 14:30 CET

##### **Friday, March 10<sup>th</sup>**

Third Session: at 9:30 CET

Fourth Session: at 14:30 CET

**The online registration procedures consist of the following steps:**

- 1. MyPORTAL Online registration at <https://humanitas.esse3.cineca.it>:** the candidate must register online to receive a username and a password; the username and password will be

necessary to access the personal page on Humanitas University MyPORTAL.

2. **Application for the Admission Test:** the candidate must apply for the admission test through MyPORTAL within the dates indicated above. After the login, candidates must click “Admission test” from the right-hand menu, select “Medicine and Surgery Degree Course”, and then “EU Admission Test” on the basis of the estimated academic year of enrolment<sup>1</sup>. Candidates must complete all the required steps until they receive a confirmation e-mail with a link to the website where it is possible to pay the test fee and select the exam sessions.
3. **Payment of the test fee and choice of the exam session:** the link redirects candidates to the Selexi homepage. Candidates must use MyPORTAL username and password to log into the portal. It is mandatory to complete the payment of the test fee to be able to select the exam sessions.

Please note that candidates who register by 18.00 CET on February 8<sup>th</sup> 2023 are obliged to select two sessions, one for the first exam round and one for the second exam round.

At the end of the first registration time window (**18.00 CET on February 8<sup>th</sup>, 2023**), **no later than 18:00 CET on February 10<sup>th</sup>**, candidates receive a confirmation email with instructions for accessing the first exam round. (see art. 4.2).

After the deadline on March 1<sup>st</sup>, 2023, by 18:00 CET on March 3<sup>rd</sup>, 2023, candidates receive a confirmation e-mail with instructions for accessing the second exam round (see section 4.2).

**Should candidate not receive the above-mentioned e-mail, please contact the Helpdesk Staff at [convocazioni@ilmiotest.it](mailto:convocazioni@ilmiotest.it).**

**Fee:** The test fee is €180,00 and it is valid to take up to a maximum of two exam rounds in 2023. The amount is the same for candidates registered for both exam rounds and for those registered only for the second exam round. The registration fee must be paid exclusively by credit card no later than 18:00 CET on February 8<sup>th</sup> 2023 in order to take both exam rounds and no later than 23:59 CET on March 1<sup>st</sup> 2023 in order to take only the second exam round.

The registration fee for the exams that will take place in the calendar year 2024 is €50,00 for candidates who have already registered to the Admission test in the calendar year 2023.

**The registration fee of € 180,00 is non-refundable in any case.**

The application for the Admission test must be completed according to the instructions described

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<sup>1</sup> Candidates display both the exam for the admission to the 2023/2024 academic year and the exam for the admission to the 2024/2025 academic year. They are required to select the exam with reference to the estimated academic year of enrolment to the University. A student attending the second-to-last year of secondary school must therefore select the exam for the admission to the 2024/2025 academic year.

above, on penalty of exclusion.

#### **Art. 4.2 Delivery of the Admission Test**

The registration confirmation e-mail, which is sent to all candidates at the end of registration, contains indications on how to complete the computer set up for the test.

Candidates are required to:

1. **Install the Proctor Exam Google Chrome plugin**, necessary to guarantee appropriate invigilation during the exam.
2. **Complete a system check**, which verifies that the video, audio, and internet connection is adequate for access to the exam.

When completing the above-mentioned steps – **to be completed at least 48 hours prior the test day** - candidates will receive a second e-mail containing the link to access the exam and instructions on how to complete their identification, which will be available in the hour before the test session scheduled time, and the environmental check to allow invigilation. Any official photo ID can be used for identification (passport, national ID card, driving license). The link to access the exam will be activated at the test session scheduled time.

During the test, invigilators will monitor candidate behavior via webcam.

The time allowed to complete the test is 120 minutes and the test is divided in two parts:

- Part 1: 60 minutes for the Scientific Thinking questions;
- Part 2: 60 minutes for Academic Literacy questions.

During the test, candidates should be aware of the following rules:

- Candidates who do not complete the identification before the test session scheduled time will not be allowed to sit the test.
- Once the candidate submits Part 1 of the test or the time expires, the candidate will not be able to access that part of the test again.
- Candidates must be always visible on their webcams. Going to the bathroom during the test is forbidden.
- Candidates are allowed to use blank paper and a pen to make calculations – invigilators will require candidates to show them before the beginning of the test.
- Candidates may not wear headphones. Speaking to anyone during the test is prohibited.
- Candidates are strictly forbidden from using phones, additional devices, books or notes during the test.
- Candidates must be in a bright room and clearly visible for the entire duration of the test.
- Nobody else may be present in the room during the test.

Candidates are aware that brief interruptions (within a time frame of ten minutes), due to problems with their devices or weak internet connection, will involve an assessment by the Supervision

Committee about the possibility to continue the exam. On this purpose, the test platform is equipped with a timer that allows the automatic reintegration of the time lost in brief interruptions. Candidates **will be always monitored** while taking the test. Those who do not comply with the above rules will be **disqualified**. The Supervision Committee will ensure that all rules are respected and will act accordingly if any violation should occur.

#### **Art. 4.3 Required hardware and software**

In order to take the Admission test online, candidates **must** have the following hardware and software requirements available:

##### **Hardware:**

- A computer or laptop with webcam, microphone and speakers.
- A smartphone or tablet.

Please note that **both** a computer/laptop **and** a smartphone/tablet are necessary to take the test.

##### **Software and Internet connection:**

- Operating system: Windows 8 or later
- MAC-OS 10.14 or later
- Browser: it is mandatory to use **Google Chrome** (Version 81.0 or later);
- Internet connection: minimum upload and download speed of 1,5 Mbps. It is highly recommended that candidates use a wired internet connection for the test.
- Smartphone or tablet (Android min v.4.1 – IOS min. v.8) equipped with a video camera.

Candidates will also be requested to download an APP on their smartphone/tablet (34MB) from Google Play or App Store.

#### **Art. 4.4 Disconnection from the Admission test: conditions for retaking the test**

In case of disconnections of the exam on-line platform, candidates may be granted the opportunity to retake the test, after a preliminary investigation by the relevant Supervision Committee.

**In order to do so, the candidate should write an email to [admissions@hunimed.eu](mailto:admissions@hunimed.eu) by 23.59. CET on the same day of the exam session.** The email should include documentation and evidence for the disruption. The Supervision Committee will decide on this matter and candidates will be informed of the decision via e-mail by Monday, February 20<sup>st</sup> 2023, 18:00 CET (first exam round) and by Monday, March 13<sup>th</sup>, 2023, 18:00 CET (second exam round).

In case a candidate does not finish the test due to disconnection from the exam platform, not attributable to the test provider, he/she **will be assigned the test score acquired at the time of disconnection.**

Possible examples of disconnection include but are not limited to: interruption of the Wi-Fi connection; power outage; technical problems related to candidates' laptop/computer. In case of video disconnection from the virtual classroom, the Commission will assess whether the candidate can continue the test or whether the test is invalidated.



Authorized candidates will retake the Admission test on **March 15<sup>th</sup>, 2023 at 14:30 CET** with the same modality as described in this document at art. 4.2. The exam paper will be of the same level of difficulty. The retake of the Admission test will lead to the cancellation of the result obtained **during the exam round when the candidate experienced disconnection problems. It will be considered only the result obtained on March 15<sup>th</sup>, 2023.**

#### **Art. 5 Candidates with special education needs**

Candidates with any kind of disability are invited to make a formal request for the support they need in order to complete the test. Candidates with learning disabilities may request the special terms foreseen in the Ministerial Decree DM 5669/2011 to guarantee equal opportunities during the test, including additional time for completing the test.

Among those candidates with disabilities the following should be considered: candidates who are blind, suffering from complete blindness or with vision not exceeding one tenth in both eyes; candidates who are deaf, from birth or before learning to speak; candidates with percentage of civil disability equal to or higher than 66%, candidates with handicap certificate of disability according to Law 104/92 as amended by Law 17/99. Disabilities must be certified by appropriate medical certificate issued by the competent health authorities. Certificates will be accepted in Italian or in English.

Among the candidates with learning disabilities the following should be considered: candidates affected by dyslexia, dysgraphia, dyscalculia or dysorthographia, certified by appropriate medical certificates, issued no earlier than 3 years prior by the National Health Service, by specialists or by accredited medical institutions, if approved by the Regions. The additional time for completing the test for candidates with learning disabilities will be in the measure of 30% compared to the standard time for the test, pursuant to Ministerial Decree DM 5669/2011.

These requests must be specified when applying for the Admission Test on MyPORTAL and the medical certificates must be attached in electronic format. **Certificates sent by e-mail will not be accepted.**

During the online procedure, after clicking on Admission test, candidates with special needs are required to request accommodations by selecting the relevant box and attach the medical report on the upload tab.

Please, do not attach any documentation to the menu area entitled "Invalidity".

## **Art. 6 Test Assessment and rankings**

According to the number of available places, the right to enrol in the one-cycle degree course in Medicine and Surgery is granted on the basis of candidates' position in the ranking list drawn up in descending order of points.

### **For admission to the 2023/2024 academic year the results taken into account are:**

- only the highest score obtained in the two sessions for candidates who took both exams rounds;
- the score obtained for candidates who took only one exam round.

**For admission to the 2024/2025 academic year, it will be taken into account** the highest score obtained during the exam rounds taken in the calendar years 2023 and 2024.

At the end of each exam round, Humanitas University publishes a ranking list with the scores obtained. The ranking list will be anonymous and candidates can consult their exam results via the link and credentials received in the second email, as referred to in Article 4.2.

The scores are assigned as follows:

- 3 points for each correct answer;
- -1 point for each incorrect answer;
- 0 points for each non-given answer.

The highest achievable score is 180 points.

Candidates who do not obtain at least 20 points in each of the test parts will not be considered for enrolment.

**Should two or more candidates obtain the same score**, the following criteria will be applied:

1. The higher-ranking position will be assigned to the candidate who has obtained a minor score difference, in absolute value, between the Scientific Thinking section and the Academic Literacy section.
2. In case of further equal scores, the higher-ranking position will be assigned to the candidate who has obtained the highest score in the Scientific Thinking section.
3. In case of further equal scores, the higher-ranking position will be assigned to the candidate who has obtained the highest score respectively in the Scientific Thinking subsections of Procedural Thinking, Visual Thinking, Mathematical Thinking.
4. In case of further equal scores, priority will be given to the younger candidate.

### **Art. 7 Publication of the ranking lists**

The ranking lists are drawn up in accordance with Article 6.

Candidates will be able to see their position in the ranking lists through the pre-matriculation number generated during the Admission Test application procedure. Moreover, using the *username* and *password* obtained during the registration on the portal, candidates can see their score by accessing their personal page.

The ranking list for the academic year 2023/2024 is published on March 20<sup>th</sup> 2023 on the web portal [www.hunimed.eu](http://www.hunimed.eu). The ranking lists will guarantee the candidates' anonymity.

The ranking list for the academic year 2024/2025 is published no later than March 30<sup>th</sup> 2024. The exact date will be specified in the relevant call for applications.

### **Art. 8 Online enrolment and reserve list for the 2023/2024 a.y.**

Enrolment - to be completed exclusively online - will be possible between **March 20<sup>th</sup>, 2023 and March 27<sup>th</sup>, 2023**. In this time range:

- Candidates with a ranking position from n. 1 to n. 30, who are eligible for a scholarship funded by the University, will automatically be considered as **pre-enrolled** until the Scholarship Winners are announced <sup>2</sup>.
- Candidates with a ranking position from n. 31 to position n. 130 are entitled to enroll.
- Candidates with a ranking position from n. 131 to position n. 160 are entitled to a conditional enrolment. Conditional enrolments will be confirmed, following the ranking order, based on the places available due to withdrawals of some students placed from position n. 1 to position n. 130. Confirmations will be sent by e-mail on March 28<sup>th</sup> 2023.

**At the latest by March 27<sup>th</sup>, 2023**, both admitted candidates (from position 31 to position 130 of the ranking) and conditionally admitted candidates (from position 131 to position 160 of the ranking) **must complete the payment of the first instalment, which amounts to 4.156,00 €, on penalty of exclusion.**

Free places, for candidates from position 161 in the ranking, will be assigned according to the following procedure:

- Publication on the website [www.hunimed.eu](http://www.hunimed.eu) of the number of places not covered due to withdrawals. Based on the test ranking and according to the number of available places, the University will begin the admission of candidates who ranked from position 161 onwards (reserve list).

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<sup>2</sup> Further information regarding the Conditions of Enrolment can be found in the Scholarship Rules and Regulation 2023-2024.

- Eligible candidates must enroll and pay the first instalment (4.156,00 €) by the deadline reported into the admission e-mail they will receive from the University.
- The procedure will be repeated until there are no more places available.

Even candidates in the reserve list might be invited to complete a conditional enrolment. The deadline will be specified in the conditional admission e-mail they will receive from the University.

**Candidates who do not comply with the above-mentioned deadlines will lose the right to enrol at Humanitas University.**

#### **Art.9 Reimbursement of the first instalment**

First instalment (of an amount of € 4.000,00) will be reimbursed only to conditionally admitted candidates (from position n. 131 to position n. 160) if enrolment cannot be confirmed.

This condition will occur if available places will be taken by other candidates with a higher position in the ranking. Those candidates will be reimbursed within 60 days of being notified.

Please, note that in no other conditions will the first instalment be reimbursed.

The regional tax (amounting to € 140,00) will be reimbursed only to candidates transferring from an Italian University, having passed the Humanitas University Admission test and already paid the regional tax to the incoming university for year 2023/2024.

#### **Art.10 Completion of enrolment at Humanitas University**

Candidates who have been invited to enroll must finalize the on-line enrolment procedure by:

1. Uploading on the following documents to the online portal (MyPORTAL):
  - Photocopy of Passport.
  - Photocopy of tax code (Codice Fiscale).
  - Passport photo.
2. Providing a self-declaration of High School qualification achieved.
3. Fully accepting the privacy policy and economic conditions specified in the call and in the University Fee Regulation.

Students completing the online enrolment procedure, having paid the first instalment, achieve the full enrolment status at Humanitas University.

For students holding a foreign secondary school qualification, a copy of that certificate translated into Italian and legalized by the Italian Consulate/Cultural Institutes, together with the Dichiarazione di Valore (Declaration of Value) released by the Consulate. These documents can be also handed in at Humanitas University Student Office from Monday to Friday, from 9.00 to 12.30 and from 14.00

to 17.00. An appointment is not necessary.

Once enrolled at Humanitas University, students with previous university courses can submit their curriculum and request the recognition of their prior activities. Recognition is subject to evaluation, according to the Humanitas University procedure

**Art. 11 Supervision committee and person responsible for the procedure**

To assure the fairness of the Admission Test procedure, Humanitas University will appoint a committee, to be formed of at least three members. University and external personnel will help the commission in the candidate identification and test supervision.

The person in charge of the procedure is Dr. Massimiliano Laganà (Managing Director of Humanitas University). For further information, candidates can contact the Student Office by phone at +39 02 8224 3777, or by email at [info@hunimed.eu](mailto:info@hunimed.eu).

**Art. 12 – Table of deadlines**

Beginning of Admission Test applications	26/10/2022
Deadline of Admission Test applications	1 <sup>st</sup> and 2 <sup>nd</sup> Exam round 08/02/2023 2 <sup>nd</sup> Exam round only 01/03/2023
Admission test	1 <sup>st</sup> Exam round 16-17/02/2023 2 <sup>nd</sup> Exam round 9-10/03/2023
Admission test retake	15/03/2023
Publication of ranking list	20/03/2023
Beginning of enrolments	20/03/2023
Deadline for enrolments and payment of first instalment	27/03/2023
Enrolment from the reserve list	28/03/2023

**Art. 13 – Additional Training Obligation (OFA test)**

In addition to the Admission test, whose purpose is to evaluate the fundamental skills required of candidates for the Degree Course in Medicine and Surgery, the University also considers it appropriate to establish whether there are any educational gaps in topics considered prerequisite for the first year. If any such educational gaps exist, the University will help enrolled students to fill these gaps.

All enrolled students will undergo a mandatory evaluation test (which is different from the Admission test) to evaluate their knowledge from previous study which is related to the disciplines of Chemistry, Physics, Mathematics, and Biology.

If the score obtained on the evaluation test is less than 50% in any of the test subjects, the enrolled student will be required to take a recovery course (Additional Training Obligation, OFA), for each discipline not passed. The recovery courses are offered during the *Induction Weeks*.

Students required to take Additional Training Obligation, OFA, will be retested at the end of the Induction Weeks. The final test will cover the individual discipline for which the recovery course was taken. The test will be written online through the University's platform. The date and the modalities of the evaluation test will be communicated after the student's enrolment.

If the test is not passed at the end of the Induction Weeks course, further recovery tests will be provided on later dates.

Passing the OFA test is mandatory to take the exams of the Medicine study plan.

**Annex A****Scientific Thinking**

**Mathematical Thinking** measures these abilities:

1. interpret graphs given an example
2. predict changes in variables in simple formulae
3. use formulae by substituting values and calculating the result
4. solve problems with symbols in place of variables, including simultaneous equations
5. put numbers in the correct order, including decimals and negative numbers)
6. work with orders of magnitudes and conversions

**SYLLABUS OF EXPECTED MATHEMATICAL KNOWLEDGE**

Basics of set theory:

- empty set, union, intersection, difference
- complementary set
- subset

Arithmetic:

- natural numbers
- operations (addition, subtraction, multiplication, division) and their properties
- priority of operations
- multiples and sub-multiples
- prime numbers and decomposition into prime factors
- greatest common divisor and least common multiple of two natural numbers
- integer numbers
- absolute value
- rational numbers as fractions
- conversion of fractions into finite or periodic decimal numbers
- use of ‘.’ and ‘,’ in the English convention
- meaning of hundred, thousand, million, billion, and trillion, as well as tenth, hundredth, etc.
- rounding a number
- percentages and proportions
- definition of a power with integer exponent
- properties of powers
- scientific notation
- square and cubic roots
- order of numbers, properties and powers

**Algebra:**

- variables, monomials, and polynomials
- special products
- substituting values into variables
- identities and equations
- addition and multiplication rules for equations
- linear and quadratic equations in one variable
- verifying solutions
- simultaneous linear equations with two or three variables
- addition and multiplication rules for inequations
- linear and quadratic inequations in one variable

**Basics of geometry:**

- formulae for the perimeter and area of squares, rectangles, triangles, parallelograms, circles

**Analytic geometry:**

- representation of numbers on a straight line
- coordinates of a point
- straight lines: vertical, horizontal, oblique
- equation of a straight line
- slope and intercept
- finding intersections between straight lines or between a straight line and the axes

**Graphs:**

- reading a graph
- finding quantities represented on the x- and y-axis, together with their units of measurement
- identifying the trend of a graph
- finding maxima and minima graphically
- comparing two graphs using the same x- or y-scale

**Quantities:**

- time (seconds, minutes, hours)
- dates (days, weeks, months, years)
- money (€, \$)
- length (meters and its multiples/submultiples)
- mass (grams and its multiples/submultiples)
- area
- volume (m<sup>3</sup> and litres, and their multiples and submultiples)
- conversion of a unit of measurement into its multiples or submultiple



**Procedural Thinking** measures these abilities:

1. follow a procedure/protocol/algorithm correctly (for example by using a flow chart)
2. predict the outcome of a perturbation in an interconnected system
3. apply the concept of collecting elements from different sets
4. compare a set of data with a scientific theory that can be confirmed or disproved by data
5. select relevant data and discard/ignore useless data
6. choose the most effective concept map to summarise a text

**Visual Thinking** measures these abilities:

1. demonstrate three-dimensional thinking ability
2. find complementary shapes
3. recognise mirror images
4. identify different visual patterns, including based on a description or an example
5. demonstrate careful observations, including localising objects in relation to other objects
6. describe a picture or a set of elements

### **Academic Literacy – Critical Thinking**

- Critical Thinking e.g. drawing reasoned conclusions and implications from data, statements, principles, judgements, beliefs or opinions.
- Local expeditious reading, e.g. scanning and searching for specific details.
- Global expeditious reading, e.g. skimming for gist, searching for key ideas.
- Global careful reading, e.g. comprehending main ideas, connecting ideas from different texts and understanding how different texts relate to each other.
- Word- and sentence-level processes, e.g. word recognition, meaning of a preposition.