



UNIVERSITÀ DEGLI STUDI DI PALERMO

CALL FOR APPLICATIONS FOR THE BACHELOR DEGREE IN NURSING -- L/SNT1 (IN ENGLISH) SCHOOL OF MEDICINE AND SURGERY -- ACADEMIC YEAR 2020/2021

THE RECTOR

GIVEN the Law n. 241 of August, 7, 1990, "New rules for the administrative procedures and the right of access to the administrative documents" and subsequent amendments and additions;

GIVEN the Law n. 341 of November 19, 1990 "Reform of University educational regulations"

GIVEN the Law by Decree of July, 25, 1998, n. 286 "Consolidated text of the provisions concerning immigration regulations and rules on the status of foreigners";

GIVEN the Law of August, 2, 1999, n. 264 "Rules for the access to University courses" and subsequent amendments;

GIVEN the Decree of the President of the Italian Republic of December, 28, 2000, n. 445, "Consolidated Act of the regulations and legislative provisions regarding the administrative documents";

GIVEN the Legislative Decree of June, 30, 2003, n. 196, "Code about the protection of personal data" and, in particular, art. 154, paragraphs 4 and 5;

GIVEN the Ministerial Decree of October 22, 2004, n. 270 "Amendments to the Regulation on the didactic autonomy of Universities approved by the Decree of the Minister of University and scientific and technological research of November, 3, 1999, n. 509;

GIVEN the Ministerial Decrees issued on March, 16, 2007 defining the classes of degree course, in accordance with the provisions of the aforementioned decree n. 270/2004;

GIVEN the Law of October, 8, 2010, n. 170 "Rules about specific learning disabilities in schools";

GIVEN the Educational Regulations of the University of Palermo as amended by Rector's Decree n. 341/2019*;

GIVEN the resolution n. 21 of the Board of Directors of the University of Palermo "Definition of the educational offer 2020/2021: programming of accesses" of January, 27, 2020

GIVEN the resolution n. 1 of the Academic Senate of the University of Palermo "Definition of the educational offer 2020/2021: programming of accesses; of January, 27, 2020

GIVEN the Law by Decree of March. 17, 2020 "Enhancement measures for the National Health Service and economic support for families, workers and businesses in relation to the epidemiological emergency from COVID-19", and namely, the art. 101, converted with amendments by Law 21 April 2020 n. 27;

GIVEN the Law by Decree n. 19 of March. 25, 2020 "Urgent provisions in relation to the epidemiological emergency from COVID-19", and namely, the art. 1, paragraph 2, letter p), converted with amendments by Law 22 May 2020 n. 35;

GIVEN the Decree of the President of the Council of Ministers of June, 11, 2020 "Further Urgent provisions in relation to the epidemiological emergency from COVID-19", and namely, the art. 1, paragraph 1, letters q) and s);

GIVEN the OFA (additional educational duties) thresholds defined by the Degree Courses, in accordance with the Academic Regulations (pursuant to the Ministerial Decree 270/2004);

GIVEN the Ministerial Decree n. 218 of June, 16, 2020 "Rules and contents of the admission tests for the 1st cycle Degree Courses and the Single Cycle Degree Courses with national programmed access, academic year 2020-2021"

GIVEN the Ministerial Decree n. 240 of June, 26, 2020, "Definition of the quota of places for non-EU candidates residing abroad for the single cycle degree and master's degree courses in Medicine and Surgery,

Dentistry, Veterinary Medicine, Architecture, Healthcare Professions and Sciences of Primary Education, academic year 2020 / 2021";

GIVEN the Ministerial Decree n. 241 of June 26, 2020 "Definition of the places available for the degree courses in Healthcare Professions A.Y. 2020/2021";

DECREES

Art. 1 General Provisions

For the academic year 2020/2021, The University of Palermo announces a competitive selection for the three-year 1st cycle Degree Course in **Nursing – in English language (code 2233)** of the School of Medicine and Surgery, class L/SNT-1 class of the Health Professions, for a number of **30 (thirty) places, plus n. 20 (twenty) places reserved for non-EU citizens not resident in Italy.**

Article 2 Participation requirements

All the holders of a High School diploma, and those who will achieve it by 30 September 2020, and who have a knowledge of English language equivalent to Level B2 of the "Common European framework of reference for languages" (CEFR) may participate in the admission test.

EU candidates, wherever resident and non-EU candidates legally residing in Italy, pursuant to art. 39, paragraph 5, of the Legislative Decree 25 July 1998, No. 286, as amended by art. 26 of the Law of July 30, 2002, No. 189, may participate if holding a qualification obtained abroad and recognized as equivalent to the Italian High School Diploma, or achieving it before September, 30, 2020.

The selection is also open to Non-EU citizens residing abroad, according to the quota defined in art. 1. Those candidates must hold a qualification obtained abroad and required for the enrolment at the Universities of their Country of origin and acknowledged as equivalent to an Italian High School diploma.

Any information related to the admission of foreign students may be found in the "Ministerial regulations for the access of students to university courses", available in the website of the MUR (Ministry of University): <http://www.studiare-in-italia.it/studentistranieri>

Art. 3 Applications

To apply online, students must:

1. Enter the page <https://studenti.unipa.it> and register by clicking on the link: "Clicca qui per registrarti al **Portale Studenti UNIPA**;
2. Log in the personal page on the **Portale Studenti UNIPA**
3. Select "Domanda di partecipazione a concorso per Corsi di Laurea a numero programmato" and fill in the whole application form;
4. the registration fee for the test is € **55.00** (fifty five/00). Online payment must be made without fail by **24 August 2020.**

Candidates are invited to carefully keep the receipt of payment of the participation fee for the competition and, if requested, show it on the day of the test to the General Coordination Board or to the Classroom Manager.

According to the current legislation on privacy, each candidate will be identified by the **identification number** found on the PAGOPA payment slip, therefore it will be his/her responsibility to keep this data to verify his/her presence in the rankings.

In no case can the participation fee for the test be refunded.

By **September 3, 2020**, the list of candidates who have applied for participation will be published on the website <http://www.unipa.it/provediammissione> .

Applications drawn up using forms or bulletins other than the official ones, sent in ways other than those described above or whose payment has been made after the deadline indicated, will not be taken into consideration.

With respect to the self-certifications, candidates, in the case of false declarations, will incur the penal sanctions provided for untruthful declarations, the formation or use of false documents, referred to in article 76 of Presidential Decree 28 December 2000 n. 445, as well as the forfeiture of the benefits consequent to the provision possibly issued on the basis of the untruthful declaration, if the verification carried out reveals the falsehood of any of the declarations made (art.75 President's Decree 28 December 2000, no. 445) and will be declared automatically forfeited from the right to enrol.

Applicants are obliged to view this announcement in its entirety.

Therefore, they are solely responsible for the correct indication of the data necessary for the admission procedures to the competitive selection and are required to check the accuracy of these data; they also undertake, if winners, to scrupulously comply with the content and procedures relating to the enrolment phase.

Disabled candidates, pursuant to law no. 104 of 5 February 1992, modified by law no. 17/1999, which, in relation to their type of disability, require individualized treatment for the test (personal assistance, specialized tutoring, specific technical aids), must fill in the part prepared for this purpose at the time of completing the registration on the student portal of the University of Palermo, indicating the type of aid required. Interested parties must also provide documented written request to the "Unità Operativa Abilità Diverse", exclusively by e-mail to the address cud@unipa.it, without fail **by August 24, 2020**, in order to allow an adequate organization of the requested service. After this date, it will not be possible to ensure the preparation of the necessary aids required for carrying out the tests.

Candidates with specific learning disabilities (DSA) certified in accordance with law n.170 of 8.10.2010, must fill in the specific part of the form completing the registration at the student portal of the University of Palermo, and provide the related certification to the "Unità Operativa Abilità Diverse" exclusively by e-mail at cud@unipa.it, without fail **by August 24, 2020**.

Pursuant to art. 12 of the Ministerial Decree of 28.06.2012 n. 196, and art. 11 paragraph 2, of the D.M. n. 334 of 24.04.2013, the candidate affected by DSA is granted an additional time equal to 30% more than that provided for the performance of the test.

Candidates can be admitted to the test with the medical certification they have, even if not updated due to the limitation of the National Healthcare Service activity for the COVID-19 emergency; however, the University of Palermo reserves the right to request subsequent integration of the documentation provided therein.

Applicants with disabilities, or DSA residing in foreign countries, who intend to take advantage of the above mentioned provisions, must present the certification attesting the status of disability, disability or DSA issued in the country of residence, accompanied by a official or certified translation of the original text issued by the Italian diplomatic missions, in Italian or English. The "Unità Operativa Abilità Diverse" of the University of Palermo is the body of the University in charge of examining the certifications referred to in the preceding paragraphs, including foreign documents declaring a condition of disability, or specific learning disability recognized by the Italian legislation

**Article 4
Examining Board**

The Board, with any Classroom Managers, will be appointed by Rector's Decree, on a proposal from the School of Medicine and Surgery; the composition of the Board will be published on the web page <http://www.unipa.it/bandicommissioni>

Article 5 Competition procedure

The admission test to the Degree Course referred to in this announcement will be held at **12:00** on **September 8, 2020**

The venues for the test and the assignment of candidates to their respective venues and classrooms will be communicated through publication on the website <http://www.unipa.it/provediammissione>.

Interested parties will not receive any further communication regarding the locations of the test.

All candidates will be required to show up at 8:30 in the locations indicated for the recognition procedures. For organizational reasons connected to the start of the test at 12:00 candidates will not be admitted to the personal identification procedures, even if they arrive in time to carry out the test, should they have already distributed the questionnaire.

In consideration of the recent measures on the containment and management of the epidemiological emergency from COVID-19, valid in the entire national territory, the University of Palermo will ensure, in the phase of access to the premises used for carrying out the tests and in the subsequent phases, the physical and social distancing between the candidates themselves as well as the adoption, by the candidates and all the other subjects, of the personal and environmental hygiene measures pursuant to the emergency legislation.

This notice has the value of an official convocation and the interested parties will not receive any further communication.

Article 6 Selective test

The admission test consists of the solution of **60 (sixty) questions in English** with five answer options each, among which the candidate must identify only one, discarding the incorrect, arbitrary or less probable conclusions, on topics of: general knowledge and logical reasoning; biology; chemistry; physics and mathematics. On the basis of the programs referred to in Annex A, an integral part of this decree, the questions will be distributed as follows: twelve (12) general knowledge questions; ten (10) of logical reasoning; eighteen (18) of biology; twelve (12) of chemistry; eight (8) of physics and mathematics.

A time of 100 minutes is provided for the admission test.

The programs relating to the admission test are attached to this Call (**Annex A**) constituting an integral part of it.

Candidates may be admitted to the admission test upon presentation of a valid personal identity document. If the candidate does not appear on the list of those admitted to the test, a necessary condition for admission, subject to approval, will be the presentation of the payment receipt for participating in the competitive selection.

Each classroom Board will personally identify each candidate by annotating the details of the identification document in special registers.

Candidates are prohibited from introducing mobile phones, palmtops, smartphones, smartwatches, tablets, earphones, webcams or other similar equipment, manuals, school textbooks and/or partial reproductions of them, handwritten notes and reference material into the classroom. The candidate who is found in possession of any of the above objects during the test will be excluded from the test and expelled from the classroom.

Any bags, backpacks, books, etc. must be left outside the classroom. The custody of the objects will not be guaranteed and we will not be held responsible for any theft or loss of the same.

At the time of the test, candidates will be provided with:

- A general instruction sheet
- The registry card
- An envelope
- A marker

- The answer sheet
- A pair of adhesive bar codes
- The sealed questionnaire

Since, for security, confidentiality and transparency of the operations, the test is printed in several versions differing from one another in the order of the questions and their answers, candidates are recommended to insert in the lower part of the answer sheet **the letter corresponding to the assigned questionnaire.**

In the absence of this indication, being unable to attribute the answers given to the assigned questionnaire, a total score of zero will be given.

The test will be cancelled if the name is placed on the card or if other signs of possible identification are found.

A maximum of ninety (90) points are awarded for the evaluation of the test and the following criteria are taken into account:

- 1.5 points for each correct answer;
- minus 0.4 (-0.4) points for each wrong answer;
- 0 points for each omitted answer.

In the event of a tie, the score obtained by the candidate in the solution, respectively, of the questions relating to the following topics prevails in decreasing order:

- General culture and logical reasoning
- Biology
- Chemistry
- Physics and Mathematics

In the event of further equality, the candidate who is younger by age prevails.

Based on the overall score, two ranking lists will be drawn up, one for EU and foreign candidates residing in Italy, pursuant to art. 26 of the law n. 189/2002, and the other for foreign candidates residing abroad.

The condition of eligibility for admission to the degree courses of the Health Professions refers only to the selective procedure in place; no rights arise from it in relation to access to the courses referred to in this announcement in years following the one in which the test was taken (point 13, Annex no. 2, Ministerial Decree no. 218 of 16 June 2020).

Article 7

OFA

For the areas of knowledge "Biology" and "Chemistry" the General Coordination Commission will not assign Additional educational duties (OFA) for candidates reaching a score equal to at least 50% of the maximum score for that area.

No additional educational duties may be attributed for the areas of knowledge "General knowledge and logical reasoning" and "Physics and Mathematics".

Additional educational duties will be fulfilled by the students admitted to the Degree Course according to the indications given by the School.

Article 8

Ranking lists and enrolments

The ranking lists will be made available within the terms established by Law 264 of 2 August 1999, through publication, constituting notification, on the website <http://www.unipa.it/graduatorie>.

Two ranking lists will be drawn up, one for EU and foreign candidates residing in Italy - as per art. 26 of the law n. 182/2002, and the other for foreign candidates residing abroad.

Candidates who, based on the rankings drawn up according to the criteria specified in art. 6 will be included in the number of available places, will have to pay tuition fees as well as the all-inclusive registration fee **by 18 September 2020.**

It is underlined that candidates are obliged to respect this enrolment date. No exemption can be granted in this regard.

To enroll you must:

- Obtain a valid (University) ISEE and/or a “ISEE parificato”, in the case of non-EU candidates residing abroad;
- Access the “**Portale Studenti Unipa**” by accessing the address <http://studenti.unipa.it> and log in through your credentials;
- Upload in the “**Portale Studenti Unipa**” a passport photo in jpg format with dimensions of 420x480 pixels and with a weight of less than 200KB;
- Follow the instructions for the “**pratica di immatricolazione**” (enrollment procedure) at the end of which a pdf document will be produced;
- Make the due payments via the PAGOPA system;
- Carry out the mandatory transmission of online documentation using the specific **Sistema Pubblico di Identità Digitale (SPID)** feature, available on the UNIPA Student Portal **by 18 September 2020**.

It is worth underlining the need to be already in possession of the ISEE (University) valid at the time of undertaking the enrolment procedure; and candidates are therefore invited to request it, from a CAF or other authorized persons, in good time. In any case, rules are set in the Student Contribution Regulations in force for the A.Y. 2020/2021.

Candidates who do not enroll, through the payment of fees and online delivery via SPID of the application for registration, within the peremptory deadline of 18 September 2020, will be considered to have renounced, regardless of the reasons for the delay.

Article 9 Ranking lists scrolling

If there are still places available, the list of those entitled - for each degree course - to enrol by scrolling, on the disposal of the Official in charge, on the page <http://www.unipa.it/scorrimenti> will be published **on September, 23, 2020**. Enrolment must take place no later than **September, 30, 2020**, under penalty of forfeiture, according to the provisions of art. 8.

Should further places remain available, the list of those entitled - for each degree course - to enrol by scrolling, will be published at the disposal of the Official in charge, **on October, 5, 2020** on the page <http://www.unipa.it/scorrimenti>. Enrolment must take place no later than **October, 9, 2020**, under penalty of forfeiture, according to the provisions of art. 8.

Should further places remain available, the list of those entitled - for each degree course - to enrol by scrolling, will be published **on October 14, 2020** on the disposal of the Official in charge, on the page <http://www.unipa.it/scorrimenti>. Enrolment must take place no later than **October, 19, 2020**, under penalty of forfeiture, according to the provisions of art. 8.

The places reserved for non-EU citizens residing abroad who have remained vacant will be reassigned to EU students pursuant to art. 2 paragraph 2, Ministerial Decree 240/2020.

The interested parties must, within the days of publication of the ranking scrolling, under penalty of forfeiture, submit an enrolment application for registration according to the procedures provided for in article 8.

Beyond the aforementioned date, in the event that there are vacant positions, the scrolling will be managed by the Administrative Secretariat of the “Servizio Speciale per la Didattica e gli Studenti”, through publication on the webpage <http://www.unipa.it/scorrimenti>

Article 10
Final provisions

The Official in charge of the administrative procedure, according to the provisions of art. 4 of the law n. 24 of 7 August 1990, is Gaetano Inserra, Head of the Unit “Concorsi, Immatricolazioni e Carriere Studenti”.

Candidates have the right to access to the proceedings of the competitive selection according to the procedures provided for by the regulations (D.R. 664 of 09 February 2004), pursuant to Law 7 August 1990 n. 241 and of the Presidential Decree 352/92. The requests must be submitted to the Public Relations Office of the Central Administration of the University of Palermo - email urp@unipa.it and telephone number 091/23893666.

As regards the provisions about the protection of personal data, please refer to Legislative Decree 196/2003 of 30 June 2003.

For anything not expressly contemplated in this announcement, the provisions of the law in force apply.
PLEASE NOTE THAT THIS DECREE HAS THE VALUE OF AN OFFICIAL CONVOCATION: THE INTERESTED PARTIES WILL THEREFORE NOT RECEIVE ANY FURTHER COMMUNICATION.

THE RECTOR
Fabrizio Micari

Annex A

Programs related to the admission test to the degree courses in Medicine and Surgery, in Dentistry and Dental Prosthesis, in Veterinary Medicine and to the degree courses of the health professions.

Admission to the courses requires a general knowledge, with particular relevance to the literary, historical-philosophical, social and institutional sphere, as well as the ability to analyse written texts of various kinds and the attitude to logical-mathematical reasoning.

The required knowledge and skills refer in any case to the preparation provided by the educational institutions offering educational activities consistent with the national indications for high schools and the guidelines for technical and professional institutes, for the Diploma examinations, which also refer to the scientific disciplines of Biology, Chemistry, Physics and Mathematics.

General knowledge and logical reasoning

Ability to correctly use the Italian language in different contexts and purposes and to logically complete a reasoning, consistent with the premises, which may be proposed in symbolic or verbal form through multiple choice questions formulated also through short propositions, discarding the incorrect, arbitrary or less likely conclusions.

The questions focus on scientific or narrative texts by classic or contemporary authors, or on current texts published in newspapers or in general or specialist magazines; they may also be related to cases or problems, even of an abstract nature, the solution of which requires the adoption of different forms of logical reasoning.

General knowledge on topics addressed during high school or present in contemporary public discourse complete this evaluation area.

For the historical context, the questions may concern, among other things, issues characterising the history of the twentieth century and the current world (industrialization and post-industrial society; conquests of fundamental rights; new subjects and movements; welfare state and its crisis; globalization and conflict processes of the global world).

For the social and institutional sphere, in coherence with national indications and guidelines and in relation to the school educational activities related to "Citizenship and Constitution", the questions may concern, among other things, the Constitutional Charter, communication and mass media, the organization of economics and political life; the different forms of state and government.

For candidates from non-EU countries residing abroad:

- questions relating to general knowledge of the supranational field, on issues addressed during the high school or present in contemporary public discourse, complete this assessment area.

For the historical context, the questions may concern, among other things, issues characterising the history of the twentieth century and the current world (industrialization and post-industrial society; conquests of fundamental rights; new subjects and movements; welfare state and its crisis; globalization and conflict processes of the global world).

For the social and institutional sphere, the questions may concern, among other things, communication and mass media, the organization of the economy and political life, the role of supranational institutions and agencies; the different forms of state and government.

Biology

The chemistry of the living.

The biological importance of weak interactions.

The organic molecules present in organisms and their respective functions. The role of enzymes.

The cell as the basis of life.

Cell theory. Cell size. The prokaryotic and eukaryotic animal and plant cell. The viruses.

The cell membrane: structure and functions - transport across the membrane.

Cellular structures and their specific functions.

Cell cycle and cell reproduction: mitosis and meiosis - chromosome kit and chromosomal maps.

Bioenergetics.

The energy value of cells: ATP.

Redox reactions in living things.

Energy processes: photosynthesis, glycolysis, aerobic respiration and fermentation.

Reproduction and Inheritance.

Life cycles. Sexual and asexual reproduction.

Mendelian genetics: Mendel's laws and their applications.

Classical genetics: chromosomal theory of inheritance - inheritance models.

Molecular genetics: DNA structure and duplication, the genetic code, protein synthesis. The DNA of prokaryotes. The structure of the eukaryotic chromosome. Genes and regulation of gene expression.

Human genetics: transmission of mono- and multifactorial characters; autosomal and X-linked hereditary diseases.

Biotechnology: recombinant DNA technology and its applications.

Inheritance and environment.

Mutations. Natural and artificial selection. Evolutionary theories. The genetic basis of evolution.

Anatomy and Physiology of animals and humans.

Animal tissues.

Anatomy and physiology of human systems and systems and their interactions.

Homeostasis.

Chemistry

The constitution of matter: the states of aggregation of matter; heterogeneous systems and homogeneous systems; compounds and elements.

Laws about perfect gases.

The structure of the atom: elementary particles; atomic number and mass number, isotopes, electronic structure of the atoms of the various elements.

The periodic system of elements: groups and periods; transition elements. Periodic properties of the elements: atomic ray, ionization potential, electronic affinity, metallic character. Relationship between electronic structure, position in the periodic system and element properties.

The chemical bond: ionic bond, covalent and metallic bond. Bond energy. Polarity of bonds. Electronegativity. Intermolecular bonds.

Fundamentals of inorganic chemistry: nomenclature and main properties of inorganic compounds: oxides, hydroxides, acids, salts.

Chemical reactions and stoichiometry: atomic and molecular mass, Avogadro number, concept of mole and its application, elementary stoichiometric calculations, balance of simple reactions, the different types of chemical reaction.

The solutions: solvent properties of water, solubility, the main ways of expressing the concentration of the solutions.

Balances in aqueous solution.

Elements of chemical kinetics and catalysis.

Oxidation and reduction: oxidation number, concept of oxidant and reducing agent. Balancing simple reactions.

Acids and bases: the concept of acid and base. Acidity, neutrality and basicity of aqueous solutions. The pH.

Hydrolysis. Buffer solutions.

Principles of organic chemistry: bonds between carbon atoms, raw and structure formulas, isomerism concept. Aliphatic, alicyclic and aromatic hydrocarbons. Functional groups: alcohols, ethers, amines, aldehydes, ketones, carboxylic acids, esters, amides. Elements of nomenclature.

Physics

The measurements: direct and indirect measurements, fundamental and derived quantities, physical dimensions of the quantities, knowledge of the decimal metric system and of the CGS, Technical (or Practical) (ST) and International (SI) systems, of the units of measurement (names and relationships between fundamental and derived units), multiples and submultiples (names and values).

Kinematics: kinematic quantities, various motions with particular regard to uniform and uniformly accelerated rectilinear motion; uniform circular motion; harmonic motion (for all motions: definition and relations between the related kinematic quantities).

Dynamics: vectors and operations on vectors. Forces, moments of forces with respect to a point. Moment of a pair of forces. Vector composition of forces. Definitions of mass and weight. Gravity acceleration. Density and specific gravity. Universal gravitation law, 1st, 2nd and 3rd principle of dynamics. Work, kinetic energy, potential energies. Energy conservation principle. Pulse and momentum. Momentum conservation principle. Mechanics of pressure fluids, and their units of measurement (not only in the SI system). Archimedes' principle. Pascal's principle. Stevin's law.

Thermology, thermodynamics: thermometry and calorimetry. Thermic capacity and specific heat. Heat propagation mode. State changes and latent heats. Laws about perfect gases. First and second principle of thermodynamics.

Electrostatics and electrodynamics: Coulomb's law. Field and electric potential. Dielectric constant. Capacitors. Series and parallel capacitors. Direct current. Ohm's law. Kirchhoff principles. Electrical resistance and resistivity. Electrical resistors in series and in parallel. Work, Power. Joule effect. Generators. Electromagnetic induction and alternating currents. Effects of electric currents (thermal, chemical and magnetic).

Mathematics

Numerical sets and algebra: natural, integer, rational, real numbers. Sorting and comparison; order of magnitude and scientific notation. Operations and their properties. Proportions and percentages. Powers with integer, rational exponent, and their properties. Radicals and their properties. Logarithms (base 10 and base e) and their properties. Elements of combinatorial calculus. Algebraic expressions, polynomials. Notable products, nth power of a binomial, factorization of polynomials. Algebraic fractions. First and second degree algebraic equations and inequalities. Systems of equations.

Functions: fundamental notions about functions and their graphical representations (domain, codomain, study of the sign, continuity, maxima and minima, growth and decrease, etc.). Elementary functions: integer and fractional algebraic, exponential, logarithmic, protractor. Compound functions and inverse functions. Protractor equations and inequalities.

Geometry: polygons and their properties. Circumference and circle. Measurements of lengths, surfaces and volumes. Isometries, similarities and equivalences in the plane. Geometric places. Measurement of angles in degrees and radians. Sine, cosine, tangent of an angle and their remarkable values. Protractor formulas. Resolution of triangles. Cartesian reference system in the plane. Distance of two points and midpoint of a segment. Straight line equation. Parallelism and perpendicularity conditions. Distance of a point from a straight line. Circumference, parabola, hyperbola, ellipse equation and their representation in the Cartesian plane. Pythagorean theorem. Euclid's theorems (first and second).

Probability and statistics: frequency distributions according to the type of character and main graphic representations. Concept of random experiment and event. Probability and frequency.