EPAM SUBJECTS

➢ BIOLOGY:

- Introduction to biology (water, mineral salts, biocatalysts, osmotic pressure, pH).
- Biomolecules (Carbohydrates, lipids, proteins, nucleic acids, enzymes).
- The origin of life and evolution. Endosymbiotic theory. Cell theory. Cell types and differences.
- Prokaryotic and eukaryotic cell structure (components, functions, protein synthesis). Cellular envelopes (cell wall, cell membrane, functions…).
- Introduction to metabolism. Types of metabolic pathways, exergonic and endergonic reactions. Catabolism and anabolism.
- Mendelian genetics. Sex-linked inheritance.
- Molecular genetics. Chromatin and packaging levels. Replication, transcription. Cellular cycle. Chromosomes. mitosis and meiosis.
- Microbiology. Concept. Study of bacteria, fungi, protozoa and viruses (structure and composition).

➢ CHEMISTRY:

- Formulas of inorganic and organic compounds.
- Chemical solutions.
- Stoichiometry.
- Atomic structure.
- Periodic table of the elements.
- Chemical bonding.
- Chemical kinetics.
- Chemical balance.
- Ácido-Base.
- Redox reactions.
- Organic reactions.

- **MATHEMATICS:**

  - System of equations.
  - Gauss method.
  - Matrix calculation.
  - Determinant of a matrix..
  - Solving linear systems..
  - Vectors in three dimensional space.
  - Planes and lines in space.
  - Metrical problems in the space.
  - Limits calculation. Continuity.
  - Derivatives. Derivatives techniques.
  - Application of derivatives.
  - Function graphing.
  - Calculation of primitives.
  - Prescription defined. Aplicacions.
  - Probability.

- **PHYSICS**:

  - Gravitational interaction.
  - Electromagnetic interaction (electrical field, magnetic field and induction).
  - Waves (simple and armonic movement, undulating motion and optical physics).
  - Geometrical optics.
  - Modern physics (relativity, nuclear physics and quantum physics).