ISTITUTO TECNICO INDUSTRIALE “LEONARDO DA VINCI” - PARMA

CLASSE : V A INDIRIZZO: AUTOMAZIONE

**A.S. 2022/2023 DOCENTE: PAOLA BELLI**

**PROGRAMMA DI LINGUA INGLESE**

**TESTI UTILIZZATI:**

**1 - Kiaran O’Malley – WORKING WITH NEW TECHNOLOGY**

**– PEARSON LONGMAN**

**2 - AA.VV. - COMPLETE INVALSI - HELBLING**

***MODULE 1***

***ELECTRICAL ENERGY AND ELECTRIC CIRCUITS***

* Atoms and electrons
* Conductors and insulators\*
* How the battery was invented
* The fuel cell\*\*
* Superconductors
* The car body that works as a battery\*\*\*
* A simple circuit
* Types of circuits

*\* YouTube video “ Science – Electric conductors and insulators” (designmate)*

*\*\* YouTube video “How fuel cells work” (HowStuffWorks) “Toyota fuel cell”*

***MODULE 2***

***GENERATING ELECTRICITY***

* Methods of producing electricity
* Renewable and non- renewable energy sources: advantages and disadvantages

of fossil fuels, nuclear power, and renewables.

* Fossil fuel power stations\*
* Nuclear power stations\*\*
* Controlling a nuclear reactor
* Hydroelectric power plants \*\*\*
* Pumped storage plants, tidal hydroelectric plants
* Wind power plants
* Geothermal energy, biomass and biofuels
* Solar power: solar furnaces and solar cells\*\*\*\*
* Changing our sources of energy

*\* YouTube video “Coal fired power plant” (Largest Dams)*

*\*\* YouTube videos “Three reasons why nuclear energy is terrible”; “Three reasons why nuclear energy is awesome” (Kurzgesagt in nutshell)*

*\*\*\* YouTube video ”Energy 101 Hydorpower” (US Department of Energy)*

*\*\*\*\* YouTube video ”Energy 101: solar power” (energynownews)*

***MODULE 3***

***AUTOMATION***

* Automation and mechanization
* How automation works
* Advantages of automation\*
* The development of automation
* Automation in the home \*\*
* How a robot works
* Varieties and uses of robots (humanoids, industrial robots, autonomous mobile robots, appliance robots, remote-control robots ) \*\*\*
* Robot fact and fiction
* Artificial intelligence
* Social consequences of automation

*\* YouTube video “What is industrial automation” (NCMCO)*

*\*\* YouTube BBC video “Voice recognition elevator”*

*\*\*\* YouTube video “Atlas, the next generation” (BostonDynamics)*

***MODULE 4***

***ELECTRONIC COMPONENTS AND SYSTEMS***

* Applications of electronics\*
* Semiconductors\*\*
* P-type and n-type semiconductors
* The properties of semiconductors
* The transistor
* Basic electronic components
* Conventional and integrated circuits
* Microprocessors
* How a microprocessor works
* Logic gates
* Do you want to be microchipped?

*\* YouTube video “Top 5 – Technology that has changed the world” (Qubimaxima)*

*\*\* YouTube video “What is a semiconductor?” (MITK12Videos)*

***MODULE 5***

***ELECTROMAGNETISM AND MOTORS***

* Electricity and magnetism
* Applications of electromagnetism
* The electric motor
* Types of electric motors: DC and AC motors; design variations
* Electric cars, hybrid cars, fuel cell cars
* Electric cars: advantages and disadvantages
* Maglev: the transport of the future?
* A short history of electric transport

*\* YouTube video “Build an electric buzzer” (Science Online)*

**PCTO:**  The Curriculum Vitae, Covering Letter

**INVALSI**: Listening and reading activities ( **CEFR** LEVELS: B1, B2, B2+ )

Parma, 31 maggio 2023

Gli studenti L’insegnante

Paola Belli