**ISTITUTO TECNICO INDUSTRIALE “LEONARDO DA VINCI” - PARMA**

**CLASSE : V A INDIRIZZO: AUTOMAZIONE**

**A.S. 2024/2025 DOCENTE: PAOLA BELLI**

**PROGRAMMA DI LINGUA INGLESE**

**TESTI UTILIZZATI:**

**1 – S. Bolognini – B.C. Barber - K. O’Malley – CAREER PATHS IN TECHNOLOGY – PEARSON LONGMAN**

***MODULE 1***

***ELECTRICAL ENERGY AND ELECTRIC CIRCUITS***

* Electricity and current
* Conductors and insulators
* Battery and voltage
* How the battery was invented
* The fuel cell
* Superconductors and semiconductors
* Ground yourself – ESD risksù
* A simple circuit
* Types of circuits
* Current, voltage and resistance
* How electrifying-Edison changed the world
* Safety: working with electricity
* New ways of lightning

***MODULE 2***

***GENERATING ELECTRICITY***

* Methods of producing electricity
* The generator
* 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
* Wind power plants
* Geothermal energy, biomass and biofuels
* Solar power: solar furnaces and solar cells
* Energy savaing at home

***MODULE 3***

***AUTOMATION***

* What is automation
* Advantages of automation
* Automation in operation: a heating system
* Automation in the home
* Automation at work
* How a robot works
* Varieties and uses of robots (humanoids, industrial robots, autonomous mobile robots, appliance robots, remote-control robots )
* Robots in manufacturing
* Artificial intelligence: Sophia – moral issues

***MODULE 4***

***ELECTRONIC COMPONENTS AND SYSTEMS***

* Applications of electronics
* Semiconductors
* P-type and n-type semiconductors
* The properties of semiconductors
* The transistor
* Types of electronic circuits
* Internet of things (IoT)
* The problem of e-waste
* Security signs
* Conventional and integrated circuits
* Microprocessors
* The man who invented microprocessor
* How microchips are made
* Microprocessor performance

***MODULE 5***

***ELECTROMAGNETISM AND MOTORS***

* Electricity and magnetism
* 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?
* Supercars: famous British cars and comparison with the Italian ones

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

Parma, 31 maggio 2025

Gli studenti L’insegnante

Paola Belli