Taupo-nui-a-Tia
COLLEGE

COURSE BOOKLET

YEAR 9
2027

For up-to-date information on courses please go to www.taupocollege.ac.nz

Arts

The Visual Art Faculty at Taupo-nui-a-Tia College is a healthy and vibrant part of the school that allows students to explore a wide range of creative fields. We aim to give our students the opportunities to develop original ideas that express themselves and the world they live in while successfully gaining NCEA qualifications. This is a rewarding subject that requires students to use their imagination and creativity, while acquiring a range of practical skills.

9DAN - Year 9 Dance

The Year 9 option dance program is available to all Year 9 students **regardless of ability or level of dance.** The course covers:

- Introduction to dance terminology.
- Dance history.
- Introduction to choreography.
- A range of styles and genres.

Students who take this course will spend the semester learning a range of dance styles including contemporary, jazz and hip hop. They will have a number of opportunities to work in groups to develop their own choreography and perform in front of their peers. Public performance is a key part of this course - in Semester 1 students will participate in our school dance showcase, Momentum, and Semester 2 students will perform at Huihui//Collide. **This course promises to be a fun, practical class in which students can be creative and express themselves.**

Teacher in Charge: Mrs Nikki Quinn

Contributions and Equipment/Stationery
Nil

9DRA – Year 9 Drama

Students build confidence, teamwork and leadership skills within the framework of creative play.

Learning and assessment activities are based around the strands of the new Arts Curriculum.

Students explore the following while developing their knowledge of dramatic conventions, elements, techniques and technologies, in the context of storytelling using Pūrākau Māori and 19th Century Melodrama:

- Knowledge and Practices of Making and Creating, also Observing and Responding to Dramatic Contexts through:
    - improvisation, story creation, performing in role and exploring theatre styles and technologies

Teacher in Charge: Ms Vivienne Gowdy

Contributions and Equipment/Stationery
Students will need to bring a scrapbook or 1B5 exercise book to keep track of learning. Additionally, there is a schoolwide expectation that all learners bring their laptop on a daily basis.

9MUS - Year 9 Music

Music: through a vibrant blend of live performance, creative composition, and music technology. In Year 9 Music, students explore how music is built across diverse global styles, learning to decode rhythms, texture, and musical structures. Central to the course are weekly performance lessons with a specialist teacher—including opportunities in brass and orchestral strings—alongside a collaborative Rock Band module where students develop live ensemble skills. Creativity takes centre stage in our Mac Suite, where students use GarageBand and Sound trap to learn the basics of digital notation, audio looping, and composition. Throughout the year, students build a confident foundation in ear training, basic theory, and expressive performance, making it the perfect entry point for any aspiring musician.

Teacher in Charge: Mr Rowan Bolley

Contributions and Equipment/Stationery:
Apple laptops are very useful in this subject as they complement our iMac computer suite. Other student laptops are also regularly used in class.

9ART - Year 9 Visual Arts

Recommended Cost $20

During this course, students will work in a variety of areas and media. Students can expect to undertake drawing, painting, print making and multimedia.

- Students will develop and extend practical skills with a range of media - Creating and making.
- Students will investigate the culture of art and refer to artist models - Observing and responding.

Teacher in Charge: Mrs Lesley Purdon

Contributions and Equipment/Stationery:
It is recommended that students pay the subject fee of $20.00, which covers the cost of all the take home materials used in the course.
A3 Visual diary, eraser, 6B pencil, sharpener, Coloured pencils, Scissors, Glue stick

---

English

Understanding, using, and creating oral, written, and visual texts of increasing complexity is at the heart of English teaching and learning. By engaging with text-based activities, students become increasingly skilled and sophisticated speakers and listeners, writers and readers, presenters and viewers.

Literacy in English gives students access to the understanding, knowledge, and skills they need to participate fully in the social, cultural, political, and economic life of New Zealand and the wider world. To be successful participants, they need to be effective oral, written, and visual communicators who are able to think critically and in depth.

By understanding how language works, students are equipped to make appropriate language choices and apply them in a range of contexts. Students learn to deconstruct and critically interrogate texts in order to understand the power of language to enrich and shape their own and others' lives.

9EN - Year 9 English

This is a full-year course.

In Years 9–10, the teaching sequence is organised into two strands:
• **Text Studies** focuses on teaching students to expand their knowledge of a broader range of literary and non-fiction
text forms. It develops students' understanding of textual features, literary techniques, and the impact of historical,
cultural, and social contexts on texts.
• **Language Studies** focuses on teaching students how to craft written, visual, and oral texts for a variety of
purposes and audiences.

In Phase 4 of the NZ Curriculum (Years 9–10), teaching advances students' English disciplinary knowledge through integrated study of texts and language. Drawing on the above strands, teachers support students to engage with complex ideas across a wide range of literary and non-fiction texts.

Teachers introduce literary tradition, showing how authors use recurring features to shape meaning and guide audience
expectations. Texts from New Zealand's literary tradition, including bicultural and multicultural voices, are used to explore
national and global conversations. Students also learn to critically evaluate how digital and media texts are constructed
and position audiences. This prepares them for deeper literary analysis, more complex text creation, and the broader
demands of senior secondary English.

Teacher in Charge: Mrs Deborah Woodward / Mrs Philippa Holmes

Contributions and Equipment/Stationery:
2 Exercise Books (1B5)

Health and Physical Education

Physical Education applies a holistic approach to the concept of physical activity for young people. Students take part in a range of games, sports and adventure-based learning, which together teach inter-personal skills such as being inclusive and working in teams. Learning in Physical Education involves the acquisition of knowledge, concepts, skills, and attitudes central to physical education, together with recognition of its potential for integration with other curriculum areas.
The focus is on the well-being of the students themselves, of other people, and of society through learning in Health related and movement contexts. In Health, students develop their understanding of the factors that influence the health of individuals, groups and society. In Physical Education, the focus is on movement and its contribution to the development of individuals and communities.

For any questions you can talk to Mrs MacLachlan

9HPE - Year 9 Health & Physical Education

Health & Physical Education contributes to personal and social development through classroom and practical learning. Students are involved in activities that require individual endeavour and interaction with others, while learning and developing life long skills and strategies for resilience, social interaction and physical activity.

The course involves participation in:

Movement Skills:

- Invasion Games
- Net and Wall Games
- Ki o rahi
- Physical Activity/Sport
- Personal Exercise Plan
- Outdoor Education

Health units in this course will be a combination of the following topics under the heading of Bodies and Minds:

- Relationships
- Self care
- Alcohol & Drugs
- Consent
- Staying safe online
- Sex Education
- Nutrition
- Stereotypes

Teacher in Charge: Ms Stephanie Witton

Contributions and Equipment/Stationery:

Laptop OR 1B5 exercise book

Students must have the correct PE uniform, as described in the uniform regulations, available for purchase online from Argyle.

Languages

The Languages Faculty encompasses: French, Spanish and Te Reo Māori. We teach how to speak the chosen language in a useful and appropriate way.

Most of our students who learn a language, or languages are complete beginners when they start in Year 9. A majority of languages can be studied through all Levels of NCEA.

Being bilingual or even multilingual bestows a distinct advantage upon our students for future studies and career opportunities. Many university faculties welcome a high level of competence in a second language as an indication of academic ability and are recommending a second language as a means of "having a difference, to stand out" from the majority of graduates.

Students who choose to learn and speak another language open doors to careers of wide diversity. Opportunities through business and commerce, law, medicine, the arts, teaching, engineering and architecture expand exponentially when another language is spoken.

In New Zealand's increasingly multicultural society, it makes sense for those working in all professions and trades to be able to understand cultural differences and to appreciate them. Learning another language promotes awareness of the differences, and similarities, of those from other cultures that students will eventually work beside.

9FRE - Year 9 French

An introduction to the French language and culture, where students will gain an appreciation of customs, festivals and lifestyles of the people of the French-speaking world. Topics covered in the course are:

- Basic introductions and greetings
- How to exchange basic information about yourself (name, age, feelings, birthdays, physical characteristics and personalities).
- Family, colours, animals, weather, school, telling time, free time, teenage life in France
- Connections between Tahiti, Polynesian culture and Māori
- Cultural activities (cooking French food…)

Teacher in Charge: Mrs Christine Feuillade

Contributions and Equipment/Stationery:
1B5 Exercise Book, Coloured pencils, Black & Blue pens, Glue stick

---

9SPA - Year 9 Spanish

An introduction to the Spanish language and culture, where students will gain an appreciation of customs, festivals and lifestyles of the people of the Spanish-speaking world. Topics covered in the course are:

- Basic introductions and greetings.
- How to exchange basic information about yourself (name, age, feelings, birthdays, physical characteristics and personalities).
- Family, colours, animals, weather, telling time, free time, teenage life in Spain
- Cultural activities.
- Make connections between indigenous population in Latin America and Māori

Teacher in Charge: Mrs Christine Feuillade

Contributions and Equipment/Stationery
1B5 Exercise Book

9MAO - Year 9 Te Reo Māori

Te Reo Māori & Te Ao Haka – Year 9

This two-semester course introduces students to Te Reo Māori, Tikanga Māori and Te Ao Haka through everyday language, culture, performance and practical activities.

Students will learn how to:

- Introduce themselves and others using mihimihi and pepeha.
- Talk about their whānau and family.
- Describe their kāinga (home).
- Learn about tikanga and kawa of the marae.
- Explore Te Ao Haka through waiata, haka, movement and performance.
- Learn about the stories, meanings and cultural significance behind Māori performing arts.
- Develop confidence in performing and working collaboratively.
- Use basic Te Reo Māori in everyday situations.

The course provides a foundation for students to continue developing their Te Reo Māori language, cultural knowledge and Te Ao Haka skills in future years.

Teacher in Charge: Ms Reina Hepi

Contributions and Equipment/Stationery:
1B5 exercise book

9HMAO - Year 9 Te Reo Māori Half Year

This one-semester course introduces students to Te Reo Māori and Tikanga Māori through everyday language, culture and practical activities.

Students will learn how to:

- Introduce themselves and others using mihimihi and pepeha.
- Talk about their whānau and family.
- Describe their kāinga (home).
- Learn about tikanga and kawa of the marae.
- Develop an understanding of Māori culture, traditions and values.
- Use basic Te Reo Māori in everyday situations.
- Build confidence in speaking Te Reo Māori and communicating with others.

The course provides a foundation for students to continue developing their Te Reo Māori language skills, cultural knowledge and understanding of Māori traditions in future years.

Teacher in Charge: Ms Reina Hepi

Contributions and Equipment/Stationery:
Pens, pencil & own device.

Mathematics

Mathematics is all about ideas, principles and concepts. Knowledge of numbers (numeracy) is important as a foundation, but mathematics is much more than this. The reasoning required for Mathematics is used in all walks of life, from music to sport, from languages to sciences.

Our aim is to prepare our students' minds to appreciate the importance and usefulness of Mathematics. Taupo-nui-a-Tia Mathematics staff endeavour to provide a positive work environment where each student can develop their personal excellence.

Year 11, Year 12 and Year 13 students can choose from a variety of courses that will address their skills and specific needs. Their choices arise from the progress they have made during each previous year level. Real progress in Mathematics is attained by students fully participating in class, making the most of all the opportunities that are offered, and having a positive attitude toward their studies.

9MA - Year 9 Mathematics

The course is based on Mathematics in the New Zealand Curriculum (Phase 4). The strands of Number, Algebra, Geometry, Measurement, Statistics and Probability are covered, as well as the mathematical processes of problem solving, developing logic and reasoning, and communicating mathematical ideas.

Emphasis will be given to the development of numeracy, measurement and algebraic skills.

Students will be given opportunities to:

- Gain confidence and competence in the use of numbers.
- Participate in real mathematical situations so as to see the use of mathematics in everyday life.
- Develop the skills of measurement.
- Develop geometrical knowledge and skills associated with shape and space.
- Generalise from patterns and relationships.
- Manipulate data.
- Using Digital Technologies for Problem Solving, Coding and Data Displays.

Teaching and learning in the classroom, and assessment, will reflect the needs and abilities of the students.

Contributions and Equipment/Stationery:

It is recommended that students have a scientific calculator with a fraction key. 2 Maths Book (1J8), Blue or black and red pen, pencil, rubber & ruler.

Science

Science requires curiosity, imagination and inspiration. In science we learn to investigate, understand and explain our world and the wider universe. We do this through the generation and testing of ideas and gathering of evidence in various ways. A good foundation in science enables problem solving and decision making in many areas of life.

Students need a basic understanding of science for many different career paths and also to cope with the challenges of technology in the world.

In our junior school we study the nature of science in the context of the living world, the material world, the physical world and planet Earth and beyond. In the senior school it is possible for students to specialise in one or more of the science disciplines.

9SC - Year 9 Science

Year 9 Science builds on the knowledge and skills developed in Year 8, with students exploring Biology, Chemistry, Physics, and Earth and Space Science in greater depth. Students carry out practical investigations, analyse and evaluate data, use models to explain scientific ideas, and develop evidence-based explanations.

This year-long course provides a strong foundation for year 10 Science and beyond.

Teacher in Charge: Mrs Amanda Simpson

Contributions and Equipment/Stationery
1x 1B8 exercise book or computer, calculator, pencil, 30cm ruler, blue and black pens, highlighter.

Social Science

Through studying Social Sciences, students develop the skills to engage as effective and responsible members of society. They acquire the skills to critically examine what they learn and draw conclusions after assessing the evidence. Theoretical components taught in the class are matched with various real-life activities that relate theory to practice. Students develop their ability to fit into society as responsible members, thereby contributing to their personal growth and development.

The Social Sciences faculty provides challenging learning programmes that meet the individual educational needs of all students in an authentic and engaging manner. We encourage students to draw on their prior knowledge in order to acquire a clear understanding of local, national and global issues.

Through Social Sciences students are offered not only a window into New Zealand but the world in which they live and will contribute to in the future. Students develop a global perspective over the years they study in the Social Sciences faculty developing a tolerance and appreciation of others and their viewpoints and can confidently discuss and debate a range of issues.

All year 9 and 10 students will study social studies. The subject is about people and how and why in different contexts they think, feel and act. It is about how they organise their way of life, interact with others and their environment, initiate and respond to change; and how they meet their political, social, economic, legal and spiritual needs.

Students will develop their inquiry skills to access information, interpret this information and communicate their findings using a range of technologies to do so.

9SS - Year 9 Social Science

The Social Studies programme is constantly evolving in order to develop the knowledge and skills that students will need in the 21st century. This will enable them to:

- Develop understanding of ideas about changing global societies as we enter a new technological age.
- Continue to develop understandings of Aotearoa New Zealand histories.
- Appropriately contribute in local, national and global communities.
- Evaluate the sustainability of alternative social, economic, political and environmental practices.
- Explore and analyse people's values and perspectives.
- Engage critically with societal happenings through an ongoing current events programme.

Teacher in Charge: Ms Catherine du Plessis / Ms Debbie Smith

Contributions and Equipment/Stationery:
1B8 exercise book OR 40-page clear file, coloured pencils, glue stick, and a personal device.

Technology

Technology is the intervention by design: the use of practical and intellectual resources to develop products and systems (technological outcomes) that expand human possibilities by addressing needs and realising opportunities.

Adaptation and innovation are the heart of technological practice. Quality outcomes result from thinking and practices that are informed, critical and creative. Technology makes enterprising use of its own particular knowledge and skills, together with those of other disciplines. Graphics and other forms of visual representation offer important exploration for communication.

Each semester presents an opportunity to follow a specialised course of study in a technology specialism. The subjects offered will be product design technology (working with wood and metal), textiles technology (designing and making fashion related items), food technology (using food with a focus on nutrition), and computing (programming and web development). Each of these courses is designed to extend the students' technological competence and confidence and provide a useful foundation for the level 1-3 courses.

9DT - Year 9 Digital Technologies

Year 9 Digital Technologies is where you will step beyond being just a consumer of technology and become an innovative creator. Aligned with the New Zealand Technology Curriculum, this dynamic course gives you the knowledge, practical skills, and creative strategies to build real-world digital solutions that make a positive impact on people, communities, and the environment.

What You Will Learn

- Facts & Concepts: Unpack the inner workings of digital systems, computer networks, data security, and hardware components. Explore how binary code and data representation allow computers to process complex information.
- Principles & Theories: Master key principles of Computational Thinking. Learn how to decompose complex problems, analyze algorithm efficiency (such as searching and sorting routines), and apply software design principles like user-centered design and digital citizenship.
- Cultural Context: Integrate local contexts and core values like Kaitiakitanga (guardianship), Auahatanga (creativity), and Manaakitanga (respectful end-user considerations) to ensure digital outcomes are ethical, sustainable, and inclusive.

Skills, Strategies & Applications

- Programming & Logic: Write and debug code using fundamental programming concepts (sequence, selection, iteration, and variables) to build interactive games, apps, or smart control systems.
- Digital Outcome Design: Design, test, and refine digital media and web-based solutions using file management conventions and digital tools. Apply functional modelling and end-user testing to evaluate whether your solution is fit for purpose.
- Collaborative Problem-Solving: Work independently and collaboratively using agile project planning strategies, taking projects from initial brief to finished product.

Teacher in Charge: Mr Mason Elliott / Mr Rod Forrest

9TM - Year 9 Fashion & Textiles Technology

Step into the world of contemporary design, sustainable fashion, and material innovation! In Year 9 Materials Processing – Textiles, students transition from simple craft to authentic technological practice. Centred on the **Designing and Developing Materials Outcomes** strand of the New Zealand Technology Curriculum, this course empowers students to solve real-world problems by turning raw fibers into fit-for-purpose textile products.

Key Learning Foundations

1. Facts, Concepts, Principles & Theories

- **Material Properties & Performance:** How physical and structural composition (natural vs. synthetic fibers, woven, knitted, and non-woven structures) influences durability, drape, stretch, thermal resistance, and environmental impact.
- **Transformation Principles:** The mechanics behind forming, manipulating, and transforming flexible materials—from grainlines and seam strength to surface embellishment techniques.
- **Technological Modelling & Evaluation:** Testing concepts using mock-ups, toile building, and trial stitching to justify design decisions before final production.
- **Sustainability & Lifecycle:** Concepts of circular design, upcycling, fabric waste reduction, and ethical product lifecycles in Aotearoa.

2. Skills, Strategies & Practical Applications

- **Safe Tool & Equipment Operation:** Safe, accurate use of sewing machines, overlockers, pressing equipment, and cutting tools.
- **Pattern & Construction Techniques:** Reading commercial patterns, measuring, seam allowance management, structural assembly, and zipper/fastener installation.
- **Problem-Solving & Iterative Design:** Applying the technological practice cycle—researching end-user needs, creating briefs, prototyping solutions, and evaluating fitness for purpose against stakeholder feedback.
- **Creative Synthesis:** Combining technical precision with personal and cultural aesthetic choices to produce original, high-quality textile outcomes.

Teacher in Charge: Mrs Emma Smith

Contributions and Equipment/Stationery:
It is recommended that students pay the subject fees of $20.00 which includes all materials needed for at least three projects to take home. A digital device.

9DVC - Year 9 Design & Visual Communication

Design and Visual Communication (DVC) is where big ideas take physical shape! In this dynamic semester course, you'll step into the shoes of an innovator, designer, and maker, learning how to transform creative concepts into real-world solutions for today and tomorrow.

What You'll Explore

- **Spatial Design:** Discover how to craft compelling 3D environments—from interior rooms and architectural structures to outdoor landscapes and public spaces. You'll explore how people move through, occupy, and experience the world around them.
- **Product Design:** Bring tangible everyday items to life! Learn how to combine functional form, aesthetics, ergonomics, and anthropometrics (human body measurements) to create user-centered products that solve genuine problems.
- **Bicultural & Regional Influences:** Ground your work in New Zealand's rich cultural landscape. You will draw inspiration from traditional and regional styles while respectfully integrating te ao Māori design principles, such as manaakitanga (hospitality and care) and spatial flow.

What You'll Master

To bring your ideas to life, you'll build a comprehensive toolkit of manual and digital design techniques:

- **Visual Communication:** Express your vision through 2D and 3D freehand sketching, instrumental drawing, physical mock-ups, and animated visual presentations.
- **Digital Modeling & Rapid Prototyping:** Dive into Computer-Aided Design (CAD) and 3D modeling using programs like Fusion, Sketchup or TinkerCAD.
- **Modern Manufacturing:** Turn your digital models into tangible prototypes using cutting-edge technologies like 3D printing, laser cutting, and Computer Numerical Control (CNC) routing.

Is This Course for You?

If you are a creative thinker who loves hands-on problem-solving, sketching, building, and using digital tech to build the future, Spatial and Product Design is your launchpad!

Teacher in Charge: Mr Rod Forrest

Contributions and Equipment/Stationery:
It is recommended that students pay the subject fees of $20 which includes all materials consumed on the laser cutter, 3D milling machine or 3D printers to take home. An A4 Visual Diary, pencil, eraser and colouring pencils.

9FN - Year 9 Food & Nutrition

This course sits within the **Design, Make, and Innovate** and **Materials and Processing Technology** strands of the New Zealand Curriculum. It transitions food learning from basic preparation into a design-led, problem-solving discipline where students examine the science, sustainability, and cultural identity behind what we eat.

Core Knowledge & Skills

Facts, Concepts, Principles & Theories

- **Nutritional Science & Well-being:** Principles of macronutrients, micronutrients, and functional foods, analyzed alongside holistic health frameworks such as Te Whare Tapa Whā.
- **Ingredient Functionality:** The physical and chemical behavior of food components during processing (e.g., starch gelatinization, protein denaturation, emulsion, and aeration).
- **Technological Practice & Design Systems:** The complete technological design process—identifying real-world opportunities, developing briefs, testing prototypes, gathering stakeholder feedback, and evaluating outcomes for fitness for purpose.
- **Food Systems & Sustainability:** Concepts of food security, seasonal sourcing, food waste minimization (preserving, fermenting), and the environmental impacts of processing choices.

Skills, Strategies & Applications

- **Kitchen Operations & Precision Skills:** Safe, efficient knife handling, precise measurement, hygienic food safety protocols, and temperature control.
- **Product Development & Trialling:** Designing original recipes or altering formulations to meet specific user constraints, such as dietary needs, budget limits, or cultural celebrations.
- **Sensory & Data Analysis:** Conducting structured sensory evaluations (texture, profile, taste) and using testing data to refine and document outcomes.

Teacher in Charge: Mrs Ylva Maxwell

Contributions and Equipment/Stationery:
Students will work on "Classroom" with their devices.
Students may be expected to bring certain ingredients from home if it is not supplied. Basic ingredients will always be available.

9WM - Year 9 Wood Metal Technology

Step into the workshop and transform raw ideas into real, functional products! Fully aligned with the updated New Zealand Technology Curriculum, this hands-on course introduces students to the exciting world of Materials and Processing Technology, combining traditional craft with modern innovation. Students explore the unique physical properties of timber and metals, learning how material selection and transformation shape everyday objects.

Core Learning & Concepts

- **Facts & Concepts:**
  Understand the physical and structural properties of native/imported hardwoods,

softwoods, ferrous metals, and non-ferrous metals. Learn workshop terminology, tool classification, and health and safety standards.

- **Principles & Theories:**
  Explore the core principle of "Fit for Purpose"—how structural integrity, mechanical joinery, and material performance determine design success. Investigate sustainability, material lifespan, and cultural contexts such as traditional Tikanga Māori timber practices and local resource stewardship.
- **Skills & Strategies:**
  Master essential hand tools, portable power equipment, and machinery. Develop precision measuring, marking out, cutting, jointing, soldering, and surface finishing techniques. Learn design strategies including rapid 2D/3D sketching, CAD (Computer-Aided Design) modeling, and iterative trialling.
- **Practical Applications:**
  Solve authentic design challenges by testing, refining, and fabricating high-quality take-home projects—such as custom timber furniture pieces, metal hand tools, or hybrid storage solutions.

Teacher in Charge: Mr Andrew Furminger

Contributions and Equipment/Stationery:
It is recommended that students pay the subject fees of $15.00 which covers the cost of take home materials used in the course.
1x A4 refill.
Own device is an advantage and necessary.

9ELE - Year 9 Electronics

Step into the world of smart automation, robotics, and integrated technology! **Systems and Control** introduces Year 9 students to how modern technological systems function, communicate, and solve real-world problems. Grounded in the updated New Zealand Curriculum *Technology* learning area, this hands-on course explores the intersections of *Technological Knowledge*, *Computational Thinking*, and *Designing and Developing Outcomes*. Students transition from passive consumers of technology into innovative creators—learning how inputs, processing, and outputs come together to build smart devices, environmental sensors, and automated solutions.

Core Learning & Concepts

- **Facts & Core Concepts:** Students investigate **Technological Systems** through the fundamental model of **Inputs, Transformation/Processing, and Outputs**. They learn key concepts including signal types (analog vs. digital), sensor operation (temperature, light, proximity), microcontrollers, integrated circuits, and dynamic logic structures (sequence, selection, and iteration).
- **Principles & Theories:** Learning is guided by **Systems Thinking**—understanding how individual components interact within a larger context, and how **Feedback Loops** regulate physical and digital environments. Students examine foundational electronics theories (voltage, current, resistance) alongside computational logic principles, algorithmic flow, and control theory. They also evaluate human-centered

design principles (usability, accessibility, and ergonomics) and the ethical, cultural, and environmental impacts of technology.

Key Skills, Strategies & Applications

- **Computational & Algorithmic Thinking:** Deconstructing complex challenges into manageable steps using flowcharts, pseudocode, and algorithmic logic.
- **Hardware Integration & Programming:** Wiring sensors, actuators, and microcontrollers (e.g., micro:bit, Arduino), writing functional code to control hardware outputs based on environmental triggers.
- **Functional Modelling & Rapid Prototyping:** Utilizing computer-aided design (CAD), circuit simulation software, and rapid prototyping tools (e.g., 3D printing or physical fabrication) to test, debug, and evaluate working prototypes before final assembly.
- **Authentic Technological Practice:** Developing fitness-for-purpose solutions following a structured design brief—such as automated green-house climate controls, smart security alarms, or mini-robotics.