TECHNOLOGY
Year 7 - 10
VCE Technology Pathways
VCE Food Studies
Product Design and Technology (Textiles)
Product Design and Technology (Wood)
Systems Engineering
Certificate II in Engineering (VCE VET)
Certificate II in Electrotechnology Integrated Technologies (VCE VET)
Certificate II in Hospitality (Kitchen Operations) (VCE VET)
Certificate II in Salon Assistant (VET)
Certificate II in Retail Cosmetics (VET)
Technology Pathways Year 7 to 12
Technology studies at Penola Catholic College involve the purposeful application of knowledge, experience and resources to create products and processes that meet human needs.

It is important that students learn to use technology and learn about its power and scope as well as its limitations. They need to learn to be innovative in perceiving possible uses of technology to solve human problems, and to orient themselves towards the future with an awareness of the implications of these possibilities.

With the appropriate knowledge and skills, students will be able to use technology in an efficient and responsible manner and thus, be better able to adapt to the rapid changes taking place in their career prospects, future work places and life styles. An understanding of the influences on, and limitations of, developments in technology will enable students to be better prepared to adapt to new applications of technology and to participate in controlling and monitoring their development.

The technology Learning Area explores the processes involved in production, regardless of what medium or material is chosen. Students will be working with equipment that complements their own skills development and enhances their knowledge of the area studied.

Year 7
Design & Technology (Wood)
All students complete a semester of Design and Technology Wood. The students are introduced to various timbers and plastics. They are involved in the design process and develop an understanding of simple construction techniques while considering safe working practices.

Food Studies
All students complete a semester of Food Studies in Year 7. The students participate in units which introduce them to the functions and proper use of kitchen and equipment. Students develop food skills and an understanding of nutrition, preparation and consumption.

Year 8
Design & Technology (Wood)
Students complete a semester of Design & Technology Wood at the Year 8 level. Students further develop skills in this area to get a better understanding of construction techniques through the safe use of hand and power tools. They will design and construct a project to specified degree of accuracy and precision and be able to make modifications when required.

Food Studies
Students complete a semester of Food Studies at the Year 8 level. In this unit students broaden their knowledge of various food groups. They develop skills in the production process by safe use of tools and equipment in the kitchen preparing, cooking and final presentation.
Year 9

Students are required to choose two Technology electives in Year 9. They may select from the following units:

- Electronics
- Food Studies
- Textiles Technology
- Design & Technology (Wood)

Points to note

The choices made in Year 9 do not limit future choices in Years 10 and 11. There are no prerequisites for any Year 10 unit or any VCE unit in this learning area.

Students who wish to study a second Language (Italian and French or Japanese and French) must select one Technology/Information Technology unit only.

Students select from the following subjects:

Electronics

In this unit, students will learn about circuit symbols, the purpose of electronic components and the use of multimeter to measure voltage and resistance in simple electronic models. They will assemble, modify and evaluate basic electronic circuits based on one or two transistors. Students will also investigate the operation of a modern technological system.

Food Studies

This unit focuses on food, health and technology. Students will broaden their knowledge of food as a functional material in preserving, the study of the Food Groups, nutrition and fast foods. Students develop skills in the production process by safe use of tools and equipment in preparing a wide variety of foods.

Textiles Technology

Students have the opportunity to investigate the nature of textiles through designing and creating a variety of products. A creative approach to textiles is taken; this can range from visual merchandising, such as textiles used for window display, to interior design products such as lamps, screens, furniture coverings, body art and wearable art and costume. Emphasis is given to designing and accessing material to generate interesting ideas.

Design & Technology (Wood)

In this unit, students broaden their knowledge of the technology of various materials. Students further develop skills in an understanding of construction processes through the safe use of hand and power tools. The students will use materials such as wood and metal to design and manufacture products, models and/or prototypes to specifications and standards. They will use a range of appropriate techniques and equipment to specified degrees of accuracy and precision to make modifications when required.
At Year 10 students begin to design their pathway to the future. The Technology learning area provides a wide range of opportunities for students to develop skills which relate to many industries. They can select from the following areas:

- Electronics
- Food and Culture
- Food Design
- Textiles Fibre and Fabrics
- Textiles Recyclable Fashion
- Design and Technology (Wood)
- Engineering

Penola Catholic College offers state-of-the-art facilities and resources to support the broad range of Technology pathways on offer. The Year 10 Subjects are Semester units.

Points To Note

- The choices made in Year 10 do not limit future choices in Year 11.
- There are no prerequisites for any VCE unit in this Learning Area.
- If you select Design and Technology – Wood or Engineering and there is not a place available for you in that elective, but you still want to do a Technology elective, you are advised to put the alternative Technology elective as your next choice.
- A number of VET Certificates are on offer through the Technology Learning Area. Year 9 students may apply to accelerate in any of the VET Certificates on offer. Please note: these are two year courses which are nationally accredited.
- Students may also apply to accelerate in the VCE Technology subjects on offer.
- Students who are very interested in the Technology subjects can choose extra units from the free choices.

Textiles – Fibres and Fabrics
Students explore the concept of textiles through looking at textile fibre, printing and decorating and manipulation of a wide variety of textile materials. The idea of textiles in interior design, furniture, costume, dress and contemporary culture may be explored through design and production.

Textiles – Recyclable Fashion
In this unit, students will broaden their knowledge whilst using a variety of sustainable textiles materials. Students will develop the skills and understanding of the construction process through the safe use of the sewing machine and other textiles related equipment. Problem solving skills in design, deconstruction and construction will be developed through the investigation of recycled and up cycled theories in fashion to create a functional final product.

Design & Technology
Wood
In this unit, students broaden their knowledge of the technology of various materials, predominantly wood. Students develop skills and an understanding of construction processes through the safe use of hand and power tools. Students further develop problem-solving skills through the design and construction process.

Engineering
This unit is an introduction to Engineering and covers areas of understanding and interpreting technical drawings, machine processes and fabrication techniques. It also looks into Occupational Health and Safety principles and using power tools for engineering related work activities. The study provides students with practical and theoretical skills to construct models from plans.

Food and Culture
In this unit, students are introduced to different cuisines from many countries around the world. Students will learn how to prepare, cook and serve a wide variety of foods from other cultures.

Food Design
This unit focuses on the creative area of food design and preparation. Students will establish skills in the construction of both savoury and sweet appetisers, to create a “High Tea” themed assessment.

Electronics
In this unit, students will use basic tools to complete a series of electronic models. They will learn simple circuit theory enabling them to make simple calculations on voltage, current and resistance. They will use measuring instruments to test the operation of their models.
VCE Food Studies takes an interdisciplinary approach to the exploration of food, with an emphasis on extending food knowledge and skills and building individual pathways to health and wellbeing through the application of practical food skills. VCE Food Studies provides a framework for informed and confident food selection and food preparation within today's complex architecture of influences and choices.

The study may also provide a foundation for exciting pathways to food science and technology, consumer science, home economics, education, the hospitality and food manufacturing industries, and nutrition and health studies.

Unit 1 Food Origins
In Area of Study 1 students explore how humanity has historically sourced its food, examining the general progression from hunter-gatherer to rural-based agriculture, to today's urban living and global trade in food.

In Area of Study 2 students look at Australian indigenous food prior to European settlement and how food patterns have changed since, particularly through the influence of food production, processing and manufacturing industries and immigration.

Students investigate cuisines that are part of Australia's culinary identity today and reflect on the concept of an Australian cuisine.

Unit 2 Food Makers
Area of Study 1 focuses on commercial food production industries, while study Area of Study 2 looks at food production in small-scale domestic settings, as both a comparison and complement to commercial production. Students gain insight into the significance of food industries to the Australian economy and investigate the capacity of industry to provide safe, high-quality food that meets the needs of consumers.

Unit 3 Food in the Daily Life
Area of Study 1 explores the science of food: our physical need for it and how it nourishes and sometimes harms our bodies. They also investigate the functional properties of food and the changes that occur during food preparation and cooking.

They analyse the Australian Dietary Guidelines and the Australian Guide to Healthy Eating and develop their understanding of diverse nutrient requirements.

Area of Study 2 focuses on influences on influences of food choice: how communities, families and individuals change their eating patterns over time and how our food values and behaviours develop within social environments.

Students inquire into the role of food in shaping and expressing identity and connectedness and the ways in which food information can be filtered and manipulated.

Unit 4 Food Issues, Challenges and Futures
Area of Study 1 focuses on issues about the environment, ecology, ethics, farming practices, the development and application of technologies, and the challenges of food security, food safety, food wastage, and the use and management of water and land.

Area of Study 2 focuses on individual responses to food information and misinformation and the development of food knowledge, skills and habits to empower consumers to make discerning food choices.

Assessment: Units 1 to 4
Satisfactory completion of all Units 1 to 4 is based on achievement of the outcomes specified for each unit. Students may be assessed on the following areas for each outcome.

- a range of practical activities and records of two practical activities related to the outcome
- AND any one or a combination of the following:
  - a short written report: media analysis, research inquiry, structured questions, case study analysis

Contribution to final assessment:
- School-assessed coursework for Unit 3 will contribute 30% to the study score
- School-assessed coursework for Unit 4 will contribute 30% to the study score
- The examination will contribute 40% to the study score.
Design and Technology focuses on developing an understanding of the social, economic and environmental consequences of design choices and decision-making. Students develop skills to critically analyse the purpose, process and products associated with design and technological innovation and activity. They develop the ability to understand, communicate and develop creative solutions while using tools, resources and human capabilities to complete a task for a given context.

Unit 1
Sustainable Product Redevelopment
This unit focuses on the analysis, modification and improvement of a product design with consideration of sustainability. Students consider the sustainability of an existing product, such as the impact of sourcing materials, manufacture, distribution, use and likely disposal. Students consider how a redeveloped product should attempt to solve a problem related to the original product.

Unit 2
Collaborative Design
In this unit students work in teams to design and develop an item in a product range or contribute to the design, planning and production of a group product. Teamwork encourages communication between students and mirrors professional design practice where designers often work within a multi-disciplinary team to develop solutions to design problems.

Unit 3
Applying the Product Design Processes
In this unit students are engaged in the design and development of a product that addresses a personal, local, or global problem, or meets the needs and wants of a potential end-user/s. Design and product development and manufacture occur in a range of settings. An industrial setting provides a marked contrast to that one-off situation in a small cottage industry or school setting.

Unit 4
Product Development and Evaluation
In this unit students engage with an end-user/s to gain feedback throughout the process of production. Students make comparisons between similar products to help evaluate the success of a product in relation to a range of product design factors. The environmental, economic and social impact of products throughout their life cycle can be analysed and evaluated.

Assessment: Units 3 & 4
- Achievement of set outcomes specified for the units.
- Written reports (SAC Tests).
- Folio work (final product).
- Product Evaluation.

Contribution to final assessment
- School-assessed coursework for Units 3 & 4 will contribute 20% to the study score.
- Units 3 & 4 are also assessed by a school-assessed task, which will contribute 50% to the study score.
- *The end of year examination will contribute 30% to the study score.
Systems Engineering is concerned with designing solutions to practical problems by integrating knowledge of science, electronics, mechanics and mathematics with technical and practical application. Systems Engineering also involves the use of advanced testing and measurement to ensure that products perform as expected. It aims to help you to create, use and control a variety of electrotechnological systems such as: a power supply, alarm, remote control and robotic arm.

Unit 1 Mechanical Engineering Fundamentals

The theoretical focus of Unit 1 is on mechanical fundamentals: force, energy, inclined planes, gears and levers. The practical focus is to design, plan, manufacture, test performance, diagnose faults and evaluate a functional system. In their investigation, students will focus on the impact of technological systems on the society and environment in which they operate.

Unit 2 Electrotechnology Engineering Fundamentals

The focus of Unit 2 in theory is on electrotechnological engineering fundamentals such as: components functions and symbols, designing printed circuit boards, measuring and testing methods and tools, elementary fault finding, repair and maintenance in design and production, and the maintenance techniques in the production activities.

In the investigation report students need to explain how new and emerging technologies, such as new materials, processes and methods of manufacture, alternative fuels and alternative energy sources provide advancement in technological systems such as microelectronics, nanotechnology, fuel cells, hybrid technology and new applications for materials. The future developments of new and emerging technology and likely effects on the design and function of a technological system will be also investigated.

Units 3 & 4 Integrated and Controlled Systems Engineering

Units 3 and 4 focus on integrated and controlled systems. Students will be designing and producing an integrated technological system of their choice such as: a remote controlled vehicle, an alarm system, a robotic arm or an automated green house. The diagnostic practices are related to the student’s production work. The knowledge and skills of project management techniques, risk assessment and risk management, folio presentation is also required.

The focus of Units 3 and 4 research is on the analysis and comparison of the environmental benefits and implications of using different energy sources and how specific energy sources affect the design, performance and use of technological systems.

Assessment: Units 3 & 4

- Achievement of set outcomes specified for the units
- Written report
- Final Product
- Product Evaluation

Contribution to final assessment:

- School-assessed coursework for Units 3 & 4 will contribute 30% to the study score
- Units 3 & 4 are also assessed by a school-assessed task, which will contribute 40% to the study score
- The end of year examination will contribute 30% to the study score.
This TAFE Certificate II in Engineering covers 14 modules over the two years of VCE. All modules are completed at school, and a certificate will be granted on completion by Education Living.

The Engineering Certificate will provide four units in the VCE Certificate and will be used in calculating the ATAR Score for tertiary selection. In addition to supporting TAFE and University applications, the certificate improves student access to Engineering and Manufacturing Apprenticeships as well as equipment assembly and sales positions.

Some aspects of the course require on-the-job training, so students will have an optional two week work placement each year. This will occur in a two week block – the last week of a school term followed by the first week of school holidays.

This VET program, is an entry level training program for students wishing to pursue a range of occupations associated with the Engineering and Manufacturing Industries. It covers the four main areas of engineering - Mechanical, Fabrication, Electrical / Electronics, and Production - with an emphasis on Fabrication.

Unit 1
Mechanical Engineering Fundamentals

Unit 2
Electrotechnology Engineering Fundamentals

Unit 3
Systems Engineering and Energy

Unit 4
Integrated and Controlled Systems Engineering

Additional VCE units may help deliver parts of the modules. eg: General Maths 1 and 2

Students will also undertake one selected elective;

• Produce basic engineering component and products using fabrication or machining

Please note: Students who wish to study Engineering in year 12, this subject covers one module of mathematics.

Assessment: Units 1 to 4
Satisfactory completion for Units 1 to 4 is based on the satisfactory achievement of the set modules specified for each unit. Students could be assessed on the following areas;

• Portfolio
• Work Performance
• Product
• Work Product

Contribution to final assessment

• Students wishing to receive a study score for Units 3 and 4 must undertake scored assessment
• Coursework Tasks contribute to 66% of a students final assessment
• The end of year examination contributes to 34% of a students final assessment
CERTIFICATE II IN ELECTRO TECHNOLOGY INTEGRATED TECHNOLOGIES (VET)

This new Integrated Technologies course covers nine modules over two years. The course has a standard VCE credit: Units 1 and 2 and a Units 3 and 4 sequence. All modules are delivered and completed at the College, and Certificate II granted on completion will be used in calculating the ATAR score for tertiary selection.

The course will also provide students with the practical skills required by Industries which broadly encompass electrotechnology, telecommunications, information technology and security systems to:

- continue TAFE or University studies
- gain work and further training through an apprenticeship, traineeship or cadetship
- find employment in fields such as: electronics, entertainment, wireless systems, energy generation, computer controlled applications, electronic equipment or computer network support.

Unit 1 & 2

The Core unit covers undertaking scheduled routine work activities in the electrotechnology industry in an agreed time, to a quality standard and with a minimum of waste. It encompasses assembling, programming and testing robots, including line-following and obstacle-avoidance robots. Students construct low voltage power supplies and investigate sustainable battery technologies.

The units of competency also set out the knowledge and skills required to carry out a shared technology project by merging distinct electrotechnology domains to achieve an innovative and integrated technical solution. This includes planning, preparation and conduct of a project in accordance with a project management plan.

Core & Elective Modules include:

- Operating a small power supply system
- Configuring and programming a basic robotic system
- Assembly and connection of a low voltage power supply
- Integrated technology project

Units 3 & 4

The core units provide the skills and knowledge to conduct routine work practices in the integrated technologies industry. They encompass the safe use of hand tools, power tools, dismantling and assembling components, application of electrical/electronic principles, 3D printing and the use of integrated technologies.

Core & Elective Modules include:

- Use software applications in integrated technology work
- Work in an integrated technology environment
- Use electrotechnology skills in integrated technology work

Assessments: Units 3 & 4

Satisfactory completion of VET/VCE ‘Integrated Technologies’ course is based on achievements of the set modules specified for each Units 1 to 4. Students will be assessed on the following areas:

- Work performance
- Final product
- Portfolio
- Test

Contribution to final assessment

- Students wishing to receive a study score for Units 3 and 4 will be doing scored assessment and examination
- Coursework tasks in Unit 3 and 4 contribute to 66% of the final assessment
- The end of the year examination contributes to 34% of the final assessment
CERTIFICATE II IN HOSPITALITY (KITCHEN OPERATIONS) (VET)

This TAFE Certificate II in Hospitality (Kitchen Operations) covers 14 modules of competence. The program aims to provide participants with knowledge and skills to achieve competencies that will enhance their employment prospects within a broad range of hospitality settings. All modules are delivered at the College. Inner Melbourne VET Cluster issues the certificate on completion.

The course will provide four units on the VCE Certificate and can be used in the best four VCE studies for calculating the ATAR score for tertiary entrance. In addition to supporting TAFE and university applications, the Certificate improves student access to apprenticeships, traineeships and employment in restaurants, reception centres, sport and entertainment venues, hotels etc.

YEAR 11
Certificate II in Hospitality (Kitchen Operations)
VCE VET Unit 1 & 2 (modules)
• Work effectively with others
• Prepare simple dishes
• Sources and use information on the hospitality industry
• Use hygienic practices for food safety
• Maintain the quality of perishable items
• Participate in safe work practices
• Use food preparation equipment
• Produce dishes using basic methods of cookery
• Clean kitchen premises and equipment
** Students are recommended to do one week of Work Placement as part of the course.

YEAR 12
Certificate II in Hospitality (Kitchen Operations)
VCE VET Units 3 & 4 (modules)
• Produce appetisers and salads
• Produce stocks, sauces and soups
• Produce vegetable, fruit, egg and farinaceous dishes
• Use cookery skills effectively
• Purchase goods

** Students are required to complete a minimum of 50 hours Work Placement in the College operated Restaurant “Stringybark” in Terms 2 & 3.

Assessment: Units 1 to 4
Satisfactory completion for Units 1 to 4 is based on the satisfactory achievement of the set modules specified for each unit. Students may be assessed on the following areas:
• Portfolio
• Work Performance
• Product
• Work Product

Contribution to final assessment
Students wishing to receive a study score for Units 3 and 4 must undertake scored assessment
Coursework Tasks contribute to 66% of a students final assessment
The end of year examination contributes to 34% of a students final assessment.
CERTIFICATE II IN SALON ASSISTANT (VET)

CERTIFICATE II IN RETAIL COSMETICS (VET)

- Certificate II in Salon Assistant (VET) and
- Certificate II in Retail Cosmetics are offered to Year 11 students (Units 1 and 2 only) and Year 10 students who are accelerating.

Certificate II in Salon Assistant and Certificate II in Retail Cosmetics only is offered to Year 11 students. All modules are delivered at school and after school hours to be completed during the course work.

This course is designed to provide students with ability and knowledge to work in a Hairdressing salon or beauty industry. This course provides students with training and assessment in the hairdressing and beauty industry. The opportunity to seek further information directly from the provider of this course will be organised at the Senior Program Information Night in Term 3.

Please note as part of the course students are required to remain at school for Salon Assistant or Retail Cosmetics classes until 5.30 pm once per week.

Year 11 Salon Assistant

Acquired Knowledge:
The breadth, depth and complexity of knowledge and skills within these courses would prepare a person to perform in a range of varied activities. An individual achieving these levels of competencies would be able to:
- Demonstrate basic operational knowledge in a moderate range of areas
- Apply a defined range of skills
- Apply known solutions to a limited range of predictable problems
- Perform a range of tasks where choice between a limited range of options is required
- Assess and record information from varied sources
- Take limited responsibility for one’s own output in work and training

Modules include:
Certificate II in Salon Assistant
- Contribute to health and safety of self and others
- Maintain and organise tools, equipment and work areas
- Greet and prepare clients for salon services
- Research and use hairdressing industry information

Year 11 Retail Cosmetics

Modules include:
Certificate II in Retail Cosmetics
- Contribute to health and safety of self and others
- Communicate as part of a salon team
- Design and apply make-up
- Advise on beauty products and services
- Design and apply make-up for photography

Assessment
Satisfactory completion is based on demonstrating competence in all core units;
- Book work
- Projects
- Practical class work
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<td>** Salon Assistant (Cert. II) (VET)**</td>
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<td><em>Year 9 Students can apply to accelerate in any of the Year 11 Technology subjects on offer.</em>*</td>
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<td>** Retail Cosmetics (Cert. II) (VET)**</td>
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<td>** These 2 courses are of a one year duration.**</td>
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