Pembina Trails School Division | PEMBINA TRAILS COLLEGIATE

# DIVISIONAL TECHNICAL VOCATIONAL EDUCATION

## DIVISIONAL TECHNICAL VOCATIONAL EDUCATION (TVE) PROGRAMMING

**— NEW FOR 2026 —**

September 2026, Pembina Trails Collegiate is expanding its Technical Vocational Education (TVE) programming with a new, state-of-the-art facility featuring modern labs, professional equipment, and industry-aligned workshops. Students will learn in an advanced environment that supports hands-on skill development, safety, collaboration, and preparation for post-secondary training and apprenticeship pathways.

TVE offers apprenticeship-aligned training in Welding, Machining, Culinary Arts, and Pastry Arts. These immersive programs support multiple pathways, including direct workforce entry, continued study at Red River Community Program (RRCP), or progression toward Red Seal and technical careers.

**Program structure:** Full-day programs designed for immersive learning in Grades 11 and 12.

**Visit our website to learn more about the TVE programming:**
https://www.pembinatrails.ca/ptcollegiate/technical-vocational-education-tve




Welding
Machining
Culinary Arts
Pastry Arts

# WELDING PROGRAM



In this program, students develop core knowledge and hands-on skills needed in today's welding and fabrication industry. Shop environments simulate real industrial settings, where students use modern equipment to safely cut, join, and assemble materials. They learn multiple welding and cutting processes, practice layout and fabrication techniques, interpret blueprints, and build confidence with tools while following rigorous safety standards. Career pathways include Red Seal Welder, Welding Inspector, Welding Engineer, Fabricator, Boilermaker, Pipefitter, Ironworker, Millwright, Mechanic, and roles in trades supervision or small business ownership. This training supports apprenticeships and post-secondary study.

## Welding Course Summaries

### Grade 11 Introduction to Welding

Students learn welding fundamentals, including safety, industry standards, tools, and materials. Through hands-on practice, they develop basic welding techniques and oxyacetylene cutting skills. By course end, students can perform essential welding tasks while meeting quality and safety requirements.

### Grade 11A Basic SMAW (Stick) Procedures

Students develop skills in Shielded Metal Arc Welding (SMAW), focusing on safety practices, power sources, electrode characteristics, and weld joint design. Hands-on practice includes welding in the flat, horizontal, vertical, and overhead positions using a variety of electrodes.

### Grade 11B Basic GMAW (MIG) Procedures

This course covers assembly, setup, and operation of Gas Metal Arc Welding (GMAW). Students gain hands-on experience using GMAW equipment while applying skills to real-world tasks. Emphasis is on safety, proper tool use, and selecting filler metals and shielding gases.

### Grade 11C Basic Metal Design, Fabrication, and Oxy Acetylene Procedures

Students learn design, fabrication, and oxyacetylene techniques through hands-on projects using various welding and cutting processes. Skills in measuring, layout, and fitting are reinforced alongside math concepts like conversions and fabrication calculations.

### Grade 12A Advanced SMAW (Stick) Procedures

Students advance SMAW skills, learning additional weld types, joint preparation, positional welding, and quality inspection techniques for higher-level proficiency.

### Grade 12B Advanced GMAW (MIG) Procedures

Students deepen GMAW skills and learn Flux Cored Arc Welding (FCAW). Focus includes advanced positional wire-feed welding and enhanced quality control.

### Grade 12C Advanced Metal Design Fabrication

Students refine fabrication and fitting skills through complex layouts and designs. A capstone project strengthens blueprint reading and weld symbol interpretation.

### Grade 12D Applied Specialties and Qualifications

Students prepare for the Manitoba Welder Practical Examination (Canadian Welding Bureau Structural Level 1) while advancing safety, equipment operation, and material selection skills.

# MACHINING PROGRAM



The Machining program develops the practical skills, technical knowledge and problem-solving abilities needed in modern manufacturing. Students learn to operate conventional and CNC equipment while building strong foundations in measurement, materials, precision machining, and safe shop practices. Working with steel, aluminum, brass, and plastics, they explore manufacturing processes and the applied use of math and science in creating or repairing components. Students interpret technical drawings, communicate ideas, and design or refine parts through hands-on learning. Career pathways include Machinist, Tool and Die Maker, Millwright, CNC Operator, and Manufacturing Technician. Students begin in Grade 11 and progress toward apprenticeship opportunities.

## Machining Course Summaries

### Machine Shop Tools (20S)

Students learn safe work practices, measurement, layout, and interpretation of engineering drawings while operating and maintaining hand and power tools. Practical projects reinforce calculations, setup, and cutting tasks to build confidence and accuracy for advanced machining.

### Applied Machine Shop Tools (30S)

Students strengthen tool selection and maintenance skills while performing drilling and sawing operations to produce machine-quality parts. Emphasis is on accuracy, safety, sharp cutting tools, and efficient setup.

### Lathe Operations and Grinding I (30S)

Students learn conventional lathe setup and operation for cylindrical parts, applying proper speeds, feeds, and work holding. Offhand grinding for tool maintenance and an introduction to CNC lathe concepts may be included.

### Milling Operations I (30S)

Students are introduced to milling machine setup and operation for flat surfaces and angles, applying correct speeds, feeds, and work holding. CNC milling concepts may be introduced.

### Lathe Operations and Grinding II (40S)

Students advance lathe skills with taper turning, carbide tool use, and shaping high-speed steel cutters. CNC lathe theory and practice emphasize safety, inspection, and quality results.

### Milling Operations II (40S)

Students deepen milling skills using accessories like dividing heads and rotary tables for precision work. CNC milling concepts and troubleshooting improve efficiency and accuracy.

### Applied Machining and Manufacturing (40S)

Students apply accumulated skills to produce industry-standard projects, often including work experience. Focus is on meeting first-year apprentice expectations and preparing for employment or an apprenticeship.

### CNC Machines (40S)

Students build CNC machining skills from planning and setup to safe operation using CAD/CAM. Instruction emphasizes interpreting drawings, program development, and quality control.

# CULINARY ARTS PROGRAM



The Culinary Arts program introduces students to essential skills needed in today's professional kitchens. Through hands-on practice, students learn knife skills, cooking techniques, measuring, mixing, seasoning, plating, and working with a wide range of recipes. Grounded in classical French foundations, the program embraces multicultural ingredients, dishes, and methods, including Indigenous foodways that shape Canada's culinary landscape. Students experience the fast pace, teamwork, organization, safety, and sanitation required in real kitchen environments. With curiosity and commitment, students build the confidence needed to take their first steps into a dynamic, demanding, and in-demand industry.

## Culinary Course Summaries

### Cooking Principles 20S

Students learn kitchen safety, sanitation, and proper use of tools and equipment. Instruction covers knife skills, workstation setup, cooking methods, seasoning, flavour development, recipe reading, and accurate measurement and scaling.

### Garde Manger 30S

Students prepare salads, dressings, and sandwiches while refining knife skills and learning plating and garnishing techniques for cold kitchen presentations.

### Vegetables and Starches 30S

Students focus on the theory behind and preparation of vegetables, potatoes, pasta, rice, and other grains and farinaceous products.

### Patisserie and Baking 30S

Students study the theory and preparation of yeast and non-yeast doughs, pies, pastries, cookies, dessert sauces, and sweet fillings.

### Breakfast and Dairy 40S

Students prepare a variety of breakfast items and explore culinary uses and properties of dairy products.

### Stocks, Soups, and Sauces 40S

Students learn to prepare stocks, soups, and sauces, including the five leading sauces and related small sauces.

### Meats, Poultry, Fish, and Seafood 40S

Students explore the theory and preparation of beef, pork, poultry, fish, and seafood, including grading and basic fabrication cuts.

### Culinary Management and Menu Design 40S

Students learn menu planning, food costing, recipe development, ordering, inventory, and management practices, integrating nutrition principles and Canada's Food Guide.

# PASTRY ARTS PROGRAM



The Pastry Arts program offers a dynamic, creative introduction to professional pastry work. Designed for students who love baking or enjoy hands-on craftsmanship, the program builds foundational knowledge in ingredients, terminology, mixing methods, and baking science while strengthening communication, teamwork, and problem-solving skills. From day one, students measure, mix, shape, decorate, and taste a wide range of products, including cookies, pies, breads, pastries, mousses, frozen desserts, and modern creations. As they refine precision, creativity, and presentation skills, students are encouraged to take risks, practise their craft, and prepare for opportunities in an exciting, evolving pastry industry.

## Pastry Arts Course Summaries

### Introduction to Baking and Pastry Arts 20S

Students learn safety, sanitation, and professionalism while preparing foundational products such as cookies, cakes, quick breads, yeast dough items, pies, and pastries.

### Quick Breads, Cookies, Doughnuts and Pies 30S

Students deepen skills in mixing methods, shaping techniques, and troubleshooting for quick breads, cookies, doughnuts, and pies.

### Yeast Dough Products 30S

Students explore fermentation, gluten development, shaping, proofing, and baking while preparing breads, rolls, pretzels, and cinnamon buns.

### Cakes, Fillings, Icings and Decorations 30S

Students study cake production and decorative techniques, including fillings, icings, glazes, piping, and design elements.

### Tarts and Special Pastries 40S

Students prepare refined French, international, and modern pastries, focusing on precision, flavour development, and professional finishing.

### Modern and Classic Desserts and Plating Techniques 40S

Students create modern and classic desserts, including frozen and plated creations, emphasizing flavour pairing, textures, and presentation.

### Advanced Bread Products 40S

Students explore artisan bread techniques, including fermentation control, shaping, scoring, and baking specialty breads such as Bannock and crackers.

### Advanced Baking and Pastries 40S

Students master chocolate work, marzipan, sugar artistry, and advanced cake design, demonstrating creativity and technical skill for industry readiness.