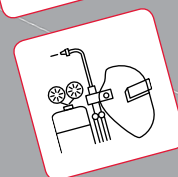
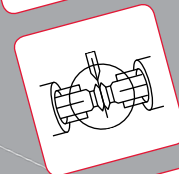
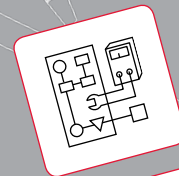
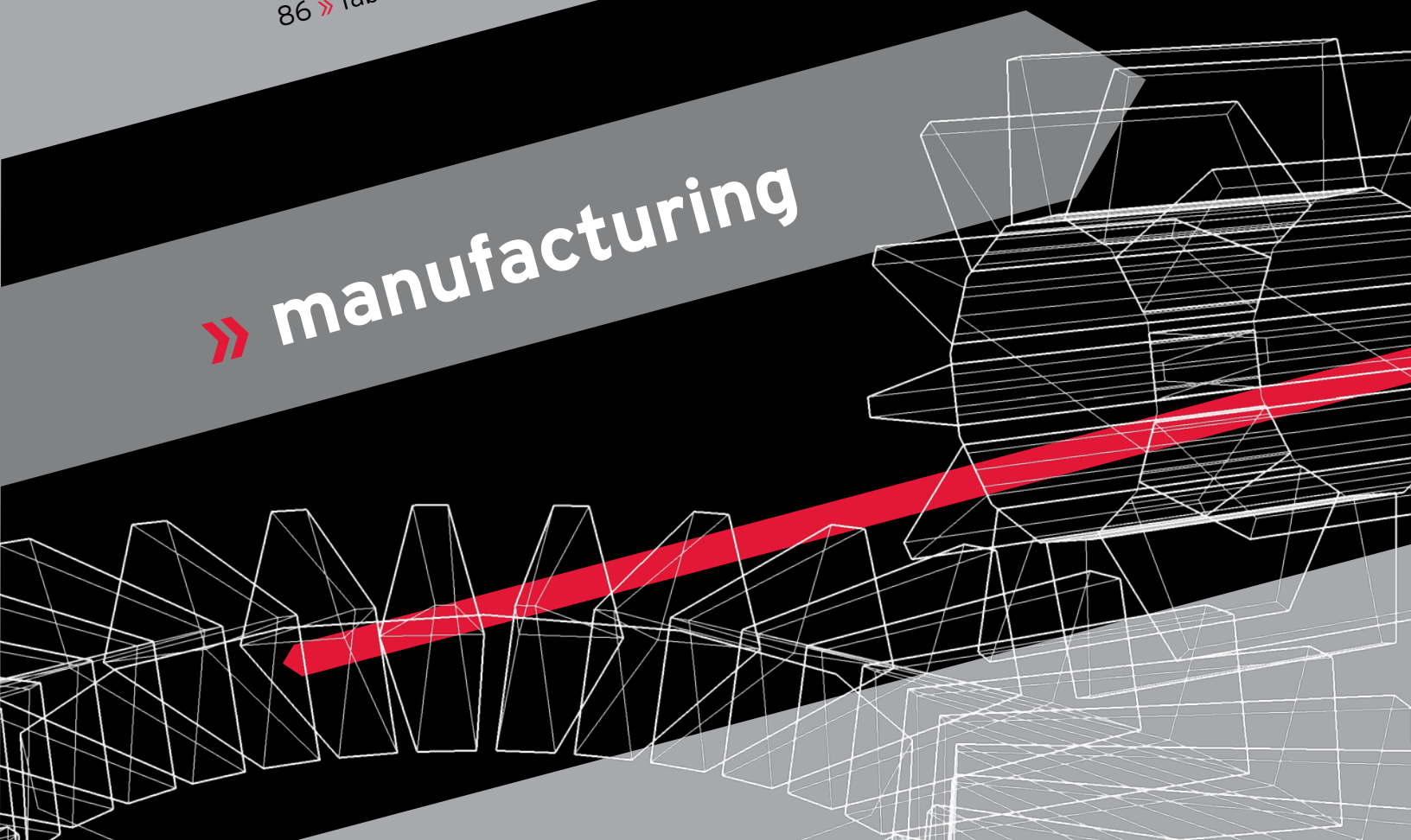
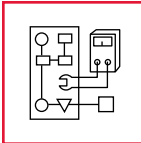


- 
- 77 » industrial technology
 - 82 » precision machining technology
 - 86 » fabrication and welding technology



» manufacturing





MANUFACTURING

- » industrial technology
- » associate of technology
- » associate of science
- » certificate of technology

» industrial technology

In today's highly complex society, technical industries and companies are being called upon to implement new technologies and equipment to improve efficiencies and maximize day-to-day operations. To minimize downtime and costly delays, companies are in need of qualified technicians capable of maintaining and repairing a wide variety of mechanical and electrical equipment. The Industrial Technology program offers comprehensive training in several of the most sought-after skills that companies are demanding as they seek employees with multi-craft talents.

Program graduates have expertise in a number of fields and are capable of stepping in and keeping equipment and machinery running in manufacturing plants, hotels or other mid-size or large companies. Recognized for their breadth of experience, they are qualified to solve most of the technical and industrial problems experienced by companies today. Additionally, our program prepares students for the EPA licensing exam covering refrigeration and air conditioning repair.

In addition to developing multiple skill sets, Industrial Technology graduates experience on-the-job diversity and increased flexibility in their career choices.

ASSOCIATE OF TECHNOLOGY, ASSOCIATE OF SCIENCE OR CERTIFICATE OF TECHNOLOGY

Ranken's Industrial Technology program provides overall instruction, hands-on training and experience in the practices and skills needed by many facilities, including universities, hospitals, hotels and industrial businesses. The Industrial Technology program offers specialized instruction in the following areas:

- » Basic electricity
- » Introduction to Heating, Ventilation, Air Conditioning and Refrigeration (HVACR)
- » Introduction to welding
- » National Electrical Code, motor controls and Programmable Logic Controllers (PLCs)
- » Basic pipefitting and plumbing
- » Carpentry maintenance
- » Hydraulics principles & theory
- » Welding (TIG, MIG and SMAW)
- » Machining fundamentals
- » Mechanical systems

Students interested in completing the certificate of technology program will take all technical courses in the associate degree program, and two general education courses.

Upon completion of the associate degree program, students are eligible for the Bachelor of Science in Applied Management (BSAM) program – and could graduate with a bachelor's degree in as little as two short years.

PROGRAM COURSES		Hours	Prerequisites
First, Second or Third Semester			
INT1100	Mechanical Print Reading	2	
INT1111	Machining and Mechanical Systems Theory	5	
INT1112	Machining and Mechanical Systems Shop	8	
First, Second or Third Semester			
INT1211	Welding/Metal Fabrication & Hydraulics Theory	5	
INT1212	Welding/Metal Fabrication & Hydraulics Shop	8	
INT2111	Industrial Facilities Maintenance Theory	5	
INT2112	Industrial Facilities Maintenance Shop	8	
Second, Third or Fourth Semester			
INT2211	Electrical/PLC/Refrigeration Systems Theory	5	All INT21-courses
INT2212	Electrical/PLC/Refrigeration Systems Shop	8	
Total technical credit hours required		54	

Important Note: First, second and third semesters may be taken in any sequence.

» automotive technology

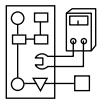
» construction technology

» electrical technology

» information technology

» manufacturing technology

» general education and degree options



MANUFACTURING

- » industrial technology
- » associate of technology
- » associate of science
- » certificate of technology

» industrial technology

GENERAL EDUCATION COURSES			Hours	Prerequisites
English/Social Sciences	ENG1101	College Composition I	3	Placement Exam or ENG1099
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology	3	ENG1099 (Co. Req.)
Mathematics/Science	MTH1110	Elementary Algebra and MTH1111 Intermediate Algebra or	6	Placement Exam or MTH1099
	MTH1100	Elementary/Intermediate Algebra	3	Placement Exam
	PHY2100	Conceptual Physics	3	MTH 1110
Business/Information Technology	CIT1100	Computer Literacy	2	
	WFD1200	Job Search Success	1	MNG1220 or BUS1204 (Co. Req.)
	BUS1204	Introduction to Business or	3	ENG1099 (Co. Req.)
	MNG1220	Principles of Management	3	ENG1099 (Co. Req.)
Associate of Science Additional Required Courses	MTH2220	Trigonometry	3	MTH2112
	PHY2230	College Physics (Substitute for PHY2100)	3	MTH2220
	MTH2240	Survey of Calculus	3	MTH2112
GENERAL EDUCATION COURSES (certificate of technology)			Hours	Prerequisites
	COM1080	Technical Communications	3	
	CIT 1110	Computer Literacy	2	

Important Note: Only courses in which a grade of "C" or higher is earned may be applied toward this Ranken degree.

COURSE DESCRIPTIONS

INT1100 Mechanical Print Reading

Covers the fundamentals of blueprints, symbols, and terms specific to machining and machinery. Students use and analyze actual projection drawings and prints. Two credit hours.

INT1111 Machining and Mechanical Systems Theory

Covers machine shop maintenance, including the use of drill presses, lathes, band saws and milling machines. Explains tools and tooling. Applies machining to machine repair and maintenance. Introduces scales, bearings, pumps, gear reducers and power transmission equipment. Five credit hours.

INT1112 Machining and Mechanical Systems Shop

Provides hands-on application of principles covered in INT1111, including the machining of shafts, cut screw threads and bearing housings. Students learn to cut external single-point threads and gain exposure to the fundamental skills needed to repair and rebuild mechanical systems and devices. Eight credit hours.

INT1211 Welding/Metal Fabrication and Hydraulics Theory

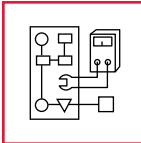
Introduces safety, the correct use of tools and the fundamentals of welding. Covers processes like Shield Metal Arc Welding (SMAW), Gas Metal Arc Welding (MIG/GMAW) and Gas Tungsten Arc Welding (TIG). Introduces oxy-fuel cutting and welding. Concludes with hydraulic fundamentals, principles, and circuit analysis. Five credit hours.

INT1212 Welding/Metal Fabrication and Hydraulics Shop

Provides hands-on exposure to mild steel, aluminum, and stainless steel materials through structured shop procedures and practices. Students use plumbing techniques to implement pumps, motors, cylinders, directional control valves, metering, and check-and-flow control valves in working circuits during the hydraulic portion of the semester. They disassemble the components for inspection, repair or replacement and final test for proper operation. Eight credit hours.

INT2111 Industrial Facilities Maintenance Theory

Provides a broad overview in three areas of study. Carpentry maintenance focuses on small construction projects, such as hanging drywall, hanging doors, suspended ceilings, concrete forms, basic surveying concepts and other building and grounds maintenance skills. Pipe fitting/plumbing maintenance includes the practical application of mathematics as well as the safe and proper use of hand and power tools used for cutting pipe, threading pipe, soldering, brazing and PVC pipe and procedures used in the trade. Electrical maintenance introduces students to the basics of electricity, including the use of tools, safety, elementary circuits, National Electric Code (NEC) requirements wiring methods, box fill, conductor ampacity, de-rating calculations and conduit bending. Five credit hours.



MANUFACTURING

- » industrial technology
- » associate of technology
- » associate of science
- » certificate of technology

» industrial technology

INT2112 Industrial Facilities Maintenance Shop

Provides hands-on application of principles covered in INT2111, including basic carpentry projects that teach the student to measure, lay out and cut. Projects include the construction of an elevated wood and metal stud structure. Exposes students to drywall and taping, window and door installation and suspended ceiling grid and stair construction. Students assemble and install various copper, PVC and iron pipe projects. Concludes with the installation of a circuit breaker panel, receptacle, switching and lighting circuits per the National Electric Code (NEC). Eight credit hours.

INT2211 Electrical/PLC/Refrigeration Systems Theory

Begins with safety, basic electrical concepts and Ohm's law. Progresses through alternating current, lighting, motors, relays, starters, overload devices, ladder logic, HID lighting equipment, basic programmable logic controller (PLC) knowledge and three-phase electrical systems and services. Introduces three-phase motors, compressors and control circuits applicable to RAH equipment. Continues with the refrigeration cycle, pressure temperature relationships, BTU calculations and refrigerant controls. Five credit hours.

INT2212 Electrical/PLC/Refrigeration Systems Shop

Provides hands-on application of principles covered in INT2211. Eight credit hours.

» automotive technology

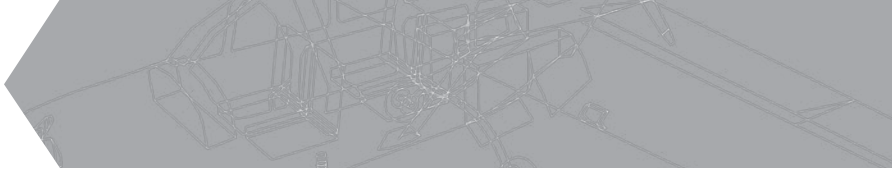
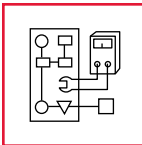
» construction technology

» electrical technology

» information technology

» manufacturing technology

» general education and degree options



» industrial technology

EVENING PROGRAM CERTIFICATE IN INDUSTRIAL TECHNOLOGY

Ranken evening program students can earn a certificate in Industrial Technology by pursuing a generalist program customized to suit individual needs and interests. These courses combine classroom and shop projects to provide overall instruction, hands-on training and experience in the practices and skills needed by area-wide facilities, including universities, hospitals, hotels and industrial businesses.

To earn a certificate in Industrial Technology, students must complete a minimum of four courses from the following:

- » Blueprint reading
- » Electrical maintenance
- » Industrial maintenance
- » Stationary engineering (license preparation)

Stand-alone courses are also available in the following:

- » Carpentry maintenance
- » Fabrication and welding technology
- » Precision machining technology
- » Plumbing technology
- » Heating, ventilation, air conditioning and refrigeration (HVACR)

Students who have graduated from any of Ranken's other two-year certificate programs may apply a maximum of two courses toward an Industrial Technology certificate.

These classes meet on Mondays and Wednesdays or Tuesdays and Thursdays from 6:00 p.m. to 9:30 p.m.

For students interested in furthering their education, these courses can be credited toward the Bachelor of Science in Applied Management (BSAM) degree.

ASSOCIATE OF APPLIED SCIENCE

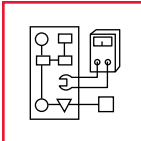
Ranken is now offering an Associate of Applied Science degree as a part of the evening program curriculum. You can earn your associate degree with a combination of Ranken's standard evening school courses as well as our new online courses. You can also transfer credit from other accredited technical training programs, or have your technical work experience evaluated for possible transfer credit. (30 technical credit hours required for graduation.)

For all General Education course requirements, please turn to page 91. For more information about the BSAM degree, please turn to page 93.

PROGRAM COURSES			Hours	Prerequisites
Blueprint Reading	BPRO100	Blueprint Reading	6	
Electrical Maintenance	EMT0110	Electrical Maintenance I	6	
	EMT0120	Electrical Maintenance II	6	EMT0110
Industrial Maintenance	INT0110	Industrial Maintenance Mechanics	6	
	INT0100	Hydraulics, Millwright and Rigging	6	
Stationary Engineering	STE0110	Stationary Engineering I	6	
	STE0120	Stationary Engineering II	6	

Total technical credit hours for certificate completion 24 (minimum)

Important Note: Students may apply any or all courses from the programs listed above to total the 24 credits necessary to qualify for an Industrial Technology certificate. Electrical Maintenance, Industrial Maintenance and Stationary Engineering may be taken as one-year certificate programs.



» industrial technology

COURSE DESCRIPTIONS

Blueprint Reading

BPR0100 Blueprint Reading

Presents the fundamentals of general blueprint reading, projection drawings, common terms and symbols. Students will learn to interpret blueprints and symbols in the machine trades, the building trades and welding. Six credit hours.

Electrical Maintenance

EMT0110 Electrical Maintenance I

Emphasizes electrical safety and proper use of tools as students cover the basics of electricity. The course provides an overview of series, parallel and combination circuits as well as electrical systems. Students become familiar with both balanced and unbalanced systems. Introduces wiring methods including cable, MC, AC, NMC and conduit bending as well as surface metal raceway and flexible wiring systems. The course also covers standard switching circuits, basic service and feeder calculations, branch circuit requirements, along with an introduction to motor controls. Six credit hours.

EMT0120 Electrical Maintenance II

Emphasizes maintenance and continued instruction of motor control circuits, ladder diagrams, control relays, motor starters and diagram reading. It also introduces students to troubleshooting PLCs. (Does not include programming of PLCs.) The installation of a three-phase transformer with panel board feeding balanced and unbalanced loads is also covered. Six credit hours.

Industrial Maintenance

INTO110 Industrial Maintenance Mechanics

Includes instruction in math, basic terms, bearings, seals, industrial pumps, power transmission, power transmission components, brakes, clutches, use of V-belts and fasteners. Also covers basic pneumatics, compressors and compressed gas systems. Six credit hours.

INTO100 Hydraulics, Millwright and Rigging

Includes instruction in the hydraulic transmission of force and energy, the operation of hydraulic pumps, hydraulic actuators, control of hydraulic energy through the use of pressure control valves, cylinders, directional control valves and flow control valves. The course also covers the millwright and rigging fundamentals of layout and leveling, ropes, knots, splices, wire rope, chins, weight calculations, CG cranes, hoists and ladders. Six credit hours.

Stationary Engineering (License Preparation)

STE0110 Stationary Engineering I

Covers boilers, including the construction of different styles, pressure capabilities, different ways of firing, safety devices and water level controls, including efficiencies, pollution, boiler auxiliaries such as feedwater heaters, softeners and feedwater treatment. Students tour an industrial boiler room and learn about pumps, both piston and centrifugal, methods of sizing, pressures and prime movers. Six credit hours.

STE0120 Stationary Engineering II

Provides a history of steam engines over the last century with tours of steam engines still used today. Course covers the replacement of steam engines by turbines, how steam engines operate air compressors and how to maintain good compressed air as well as the basics of electricity and how to start and synchronize generators safely. The course will then focus on power generation, efficiency and how to obtain the most productivity from electrical equipment. Students will finish up the semester learning the basics of all industrial refrigeration with an emphasis on ammonia, efficiencies and safety. Six credit hours.

Please Note: Stationary Engineer classes are also available from 8:15 a.m. to 11:45 a.m. These classes are synchronized with evening classes to accommodate swing shift workers.

» automotive technology

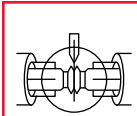
» construction technology

» electrical technology

» information technology

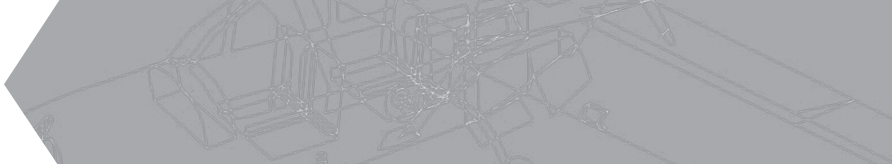
» manufacturing technology

» general education and degree options



MANUFACTURING

- » precision machining technology
- » associate of technology
- » associate of science
- » certificate of technology



» precision machining technology

As new technologies continue to shape the manufacturing industry, companies are experiencing an immediate demand for machinists who are qualified to construct and maintain machines and equipment. Through Ranken's Precision Machining Technology (PMT) program, students receive training and hands-on instruction that emphasizes the design and construction of various operating components for machinery.

In fact, our PMT program is accredited by the National Institute for Metalworking Skills (NIMS). The NIMS accreditation means that you will receive the best in instruction, curriculum, equipment and facilities.

Ranken's Precision Machining Technology program provides a foundation for engineering and prepares students for employment in machining, Computerized Numerical Control (CNC) programming, mold/die making, inspection/quality control, maintenance and machine tool building. The state-of-the-art Haas Technical Center and CAD/CAM computer lab offers students the experience necessary to advance on the job by learning the latest computerized machining technology. While the primary purpose of the program is training skilled, general machinists, students are also trained in various specialties, including CNC, Computer Aided Drafting (CAD)/Computer Aided Manufacturing (CAM), inspection and quality control, tool and die, mold work and maintenance machining.

Due to the rapid expanding use of sophisticated CNC machine tools, coupled with the demand for machinists generated by the local defense industry, the St. Louis area is experiencing a shortage in those trained in the latest technologies. Therefore, the employment outlook for PMT graduates continues to be exceptionally promising.

ASSOCIATE OF TECHNOLOGY, ASSOCIATE OF SCIENCE OR CERTIFICATE OF TECHNOLOGY

Throughout the two-year associate degree program, students will gain practical experience while programming and operating modern machinery in a well-equipped facility similar to those commonly found in today's industry. The curriculum includes mechanical and computer design, dimensioning, blueprint reading and fundamental tool making, as well as hands-on experience in basic hand tools and shop technologies.

In addition, the program emphasizes the application of basic math principles in simulated shop situations. The program curriculum is comprised of various specialties, including:

- » Computer Numerical Control (CNC) Programming
- » Computer Aided Drafting (CAD)/Computer Aided Manufacturing (CAM)
- » Inspection
- » Tool and Die
- » Mold Work
- » Maintenance Machining

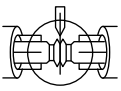
By analyzing a company's end product, constructing the parts and maintaining various pieces of equipment on an ongoing basis, students are exposed to problem-solving skills and are trained to meet the machining needs of today's technical industries. Instruction occurs on the latest state-of-the-art equipment.

As a testament to industry support of this program, Ranken has one of the largest Haas Technical Centers in the region. Students are able to train on the state-of-the-art Haas CNC machines, giving them exposure to cutting edge technology.

Students interested in completing the certificate of technology program will take all technical courses in the associate degree program, and two general education courses.

Upon completion of the associate degree program, students are eligible for the Bachelor of Science in Applied Management (BSAM) program – and could graduate with a bachelor's degree in as little as two short years.

PROGRAM COURSES			Hours	Prerequisites
First or Second Semester	PMT1001	Introduction to Machining Theory	5	
	PMT1002	Introduction to Machining Lab	8	
	PMT1010	Mathematics for the Machine Trade	3	Co. Req. of Semester One Courses
First or Second Semester	PMT1011	Computer Numerical Control Theory	5	
	PMT1012	Computer Numerical Control Lab	8	
Third or Fourth Semester	PMT1021	CAD/CAM Theory	5	
	PMT1022	CAD/CAM Lab	8	
Third or Fourth Semester	PMT2001	Advanced Machining/Die & Moldmaking Theory	5	PMT1001
	PMT2002	Advanced Machining/Die & Moldmaking Lab	8	PMT1002
Total technical credit hours required			55	



MANUFACTURING

- » precision machining technology
- » associate of technology
- » associate of science
- » certificate of technology

» precision machining technology

GENERAL EDUCATION COURSES			Hours	Prerequisites
English/Social Sciences	ENG1101	College Composition I	3	Placement Exam or ENG1099
	ENG2102	College Composition II	3	ENG1101
	COM1105	Oral Communications	3	
	SOC1206	Principles of Sociology	3	ENG1099 (Co. Req.)
Mathematics/Science	MTH1110	Elementary Algebra and MTH1111 Intermediate Algebra or	6	Placement Exam or MTH1099
	MTH1100	Elementary/Intermediate Algebra	3	Placement Exam
	PHY2100	Conceptual Physics	3	MTH 1110
Business/Information Technology	CIT1100	Computer Literacy	2	
	WFD1200	Job Search Success	1	MNG1220 or BUS1204 (Co. Req.)
	BUS1204	Introduction to Business or	3	ENG1099 (Co. Req.)
	MNG1220	Principles of Management	3	ENG1099 (Co. Req.)
Associate of Science Additional Required Courses	MTH2220	Trigonometry	3	MTH2112
	PHY2230	College Physics (Substitute for PHY2100)	3	MTH2220
	MTH2240	Survey of Calculus	3	MTH2112
GENERAL EDUCATION COURSES (certificate of technology)			Hours	Prerequisites
	COM1080	Technical Communications	3	
	CIT 1110	Computer Literacy	2	

Important Note: Only courses in which a grade of "C" or higher is earned may be applied toward this Ranken degree.

COURSE DESCRIPTIONS

PMT1001 Introduction to Machining Theory

Introduces students to an assortment of hand tools, measuring instruments and basic machine processes used in the machinist trade. Students will learn the safety and operation of machine tools such as a power saw, bench grinder, drill press, and lathe, along with horizontal and vertical mills. Students learn to read and interpret blueprints in addition to planning the manufacturing process of a mechanical part. The course will also expose students to mathematical problems commonly used in the machinist trade, beginning with basic math and advancing through transposition of formulas, calculating speeds and feed rates, proportions and ratios and concluding with an introduction to trigonometry. Five credit hours.

PMT1002 Introduction to Machining Lab

Introduces hand tools, measuring tools and layout procedures, then transitions into basic machine principals, including safety, operation and part set-ups for primary and secondary machining operations on conventional machines. Students learn to read and interpret blueprints, make calculations, build machine set-ups and manufacture mechanical parts using a drill press, power saw, lathe and vertical and horizontal milling machines. Also, includes the basic care and use of various measuring instruments commonly used in the machinist trade. Eight credit hours.

PMT1010 Mathematics for the Machine Trade

This course introduces the student to the mathematics needed to succeed in the machine trade. It provides an understanding of mathematical concepts and their application to the machine trade – with real problems that the student will encounter in the industry. Students will solve problems that contain fractions and percentages, use customary (English) or metric units of measure, apply the fundamentals of algebra, plane geometry, and trigonometry to everyday machining problems including, finding areas and volumes and solving machining problems that involve compound angles. Three credit hours.

PMT1011 Computer Numerical Control Theory

Introduces students to basic numerical control programming, then transitions into advanced programming of a CNC lathe, vertical and horizontal machining centers with 4th axis capabilities. The hardware associated with Computerized Numerical Control (CNC), the cartesian coordinate system, and absolute/incremental programming formats are covered. Also, the use of computers to program, edit, and graphically plot programs for mechanical parts will be included. The course then introduces the students to Vericut software to check their CNC programs on a computer before running them on the Haas CNC equipment. The last part of the semester students will be introduced to Master Cam software in order to create basic 2D blueprints with the aid of a computer. These basic skills will then be used to create 3D wire frame blueprints. Five credit hours.

» automotive technology

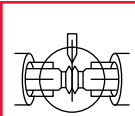
» construction technology

» electrical technology

» information technology

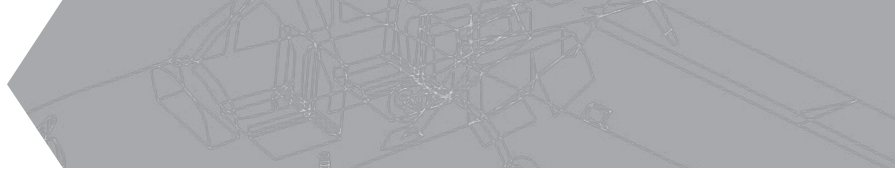
» manufacturing technology

» general education and degree options



MANUFACTURING

- » precision machining technology
- » associate of technology
- » associate of science
- » certificate of technology



» precision machining technology

PMT1012 Computer Numerical Control Lab

Introduces the student to programming and operation of Computerized Numerical Control (CNC) machine tools. Provides hands-on experience programming, setting-up and operating CNC equipment. Students will be provided with a blueprint and will be responsible for programming and editing a part, choosing the correct tooling and fixturing, along with creating a set-up sheet document upon completion of the project. The students will be required to verify their programs using Vericut software towards the end of the semester. Eight credit hours.

PMT1021 CAD/CAM Theory

Students continue learning Master Cam in order to create and manipulate 3D, surface, and solid parts. They will use these parts to create tool paths to produce parts on Haas CNC (Computer Numerical Control) machines. The student will also learn the essentials of SolidWorks and will create parametric models of parts and assemblies they previously created using Master Cam. Five credit hours.

PMT1022 CAD/CAM Lab

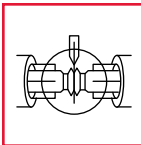
Students will use CAD (Computer Aided Design) and CAM (Computer Aided Manufacturing) to design, draw, and produce a variety of parts using Haas CNC (Computer Numerical Control) equipment. Using Master Cam and Solid Works software, the students will learn how to draw 3D wire frame, surfaces, and solid model parts. The students will also use Master Cam to develop the complex programs needed to produce a variety of parts on 3 and 4 axis Haas mills and 2 axis Haas lathes. The course will conclude with the student assembling the parts produced during the semester and creating a solid model of the finished assembly. Eight credit hours.

PMT2001 Advanced Machining/ Die & Moldmaking Theory

The course begins with reviewing fundamental layout tools, measuring instruments, machine set-ups and machining processes. It then transitions into advanced machining processes of intricate parts which require custom fixturing and complex set-ups. In the tool and die/mold making portion of this course, the students will learn the function and terminology of a stamping die and the molding process. Students will learn the theory of heat treating a piece of steel along with the grinding process required to manufacture a precision machine part. Five credit hours.

PMT2002 Advanced Machining/Die & Moldmaking Lab

Students apply their machining skills and technical knowledge in order to manufacture a complex mechanical part to blueprint tolerance specifications on conventional machines found in a machine shop. Participating in a team manufacturing project, they will work in small groups designing, problem solving, and manufacturing a product that replicates common practices found in prototype part development. Students will apply tool and die knowledge by building, assembling and running a stamping die in a punch press while experiencing advanced inspection equipment, which include a Coordinate Measurement Machine and an Optical Comparator. Eight credit hours.



MANUFACTURING
 » precision machining technology
 » associate of applied science
 » certificate of technology

» precision machining technology

EVENING PROGRAM CERTIFICATE IN PRECISION MACHINING TECHNOLOGY

This machinist-level program consists of machining, metal processing theory, mathematics, blueprint reading, Computerized Numerical Control (CNC) programming and Computer Aided Drafting/Computer Aided Manufacturing (CAD/CAM). The primary goal of the program is to develop fundamental machining skills on milling machines, lathes and surface grinders.

Sections can be taken as stand alone sections or combined for a two-year certificate. In order to receive the certificate, students must complete Engine Lathe Fundamentals, Milling Machine Fundamentals, Advanced Machining and CNC Programming sections.

The CAD/CAM section focuses on topics such as advanced computer literacy for the programmer, fundamentals of two-dimensional and three-dimensional drafting, and programming with the latest state-of-the-art software.

These classes meet Mondays and Wednesdays or Tuesdays and Thursdays from 6:00 p.m. to 9:30 p.m.

For students interested in furthering their education, these courses can be credited toward the Bachelor of Science in Applied Management (BSAM) degree.

ASSOCIATE OF APPLIED SCIENCE

Ranken is now offering an Associate of Applied Science degree as a part of the evening program curriculum. You can earn your associate degree with a combination of Ranken's standard evening school courses as well as our new online courses. You can also transfer credit from other accredited technical training programs, or have your technical work experience evaluated for possible transfer credit. (30 technical credit hours required for graduation.)

For all General Education course requirements, please turn to page 91. For more information about the BSAM degree, please turn to page 93.

PROGRAM COURSES			Hours	Prerequisites
Section One	PMT0111	Engine Lathe Fundamentals	6	
Section Two	PMT0113	Milling Machine Fundamentals	6	
Section Three	PMT0211	Advanced Machining	6	PMT0111 and PMT0113
Section Four	PMT0213	CNC Programming	6	PMT0113
Section Five	PMT0224	CAD/CAM	6	PMT0111 and PMT0213

COURSE DESCRIPTIONS

PMT0111 Engine Lathe Fundamentals

The student will concentrate on the manual lathe. They will learn turning, threading, taper turning and drilling operations. Students will learn setups such as, between centers, three jaw chucks and four jaw chucks. They will also have lessons on basic right angle trigonometry, print reading, drill presses, saws and lay-out. Six credit hours.

PMT0113 Milling Machine Fundamentals

The student will concentrate on the vertical and horizontal milling machines. They will learn the set-up and operations of a mill. Students will also have lessons on basic right angle trigonometry, print reading, drill presses, saws and lay-out. Six credit hours.

PMT0211 Advanced Machining

Students will be using lathes, mills and surface grinders. The projects involve assembly and tooling used in industry. Trigonometry, heat treating, carbide tooling and grinding machines will also be covered. Six credit hours.

PMT0213 CNC Programming

Students will learn basic CNC programming, including G and M codes, unique codes and thread milling. The course also covers the CNC lathe and students will learn how to set-up and operate Haas CNC machine tools. Six credit hours.

PMT0224 CAD/CAM

Students will begin by learning Master Cam software in order to draw blueprints with the aid of a computer. These basic drawing skills will develop into drawing 3D wire frame and solid model parts. The mill and lathe CAM instruction will be used to generate programs and machine a finished part. Six credit hours.

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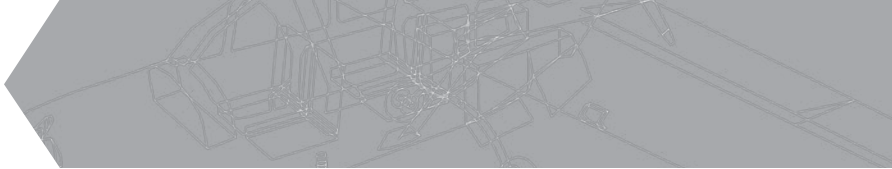
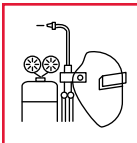
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» fabrication and welding technology

Due to high demand, Ranken is now offering a Fabrication and Welding Technology program in a brand new state-of-the-art facility. The curriculum includes oxy-acetylene welding, oxy-fuel cutting, shielded metal arc welding (SMAW), gas metal arc welding (GMAW) and gas tungsten arc welding (GTAW). The theory for each of these processes is discussed along with proper joint design and proper welding techniques.

Blueprint reading and welding symbol interpretation are practiced throughout the course. The welding is done on plate and pipe on low carbon steel, stainless steel and aluminum. Several certification tests are offered in SMAW, GMAW and GTAW.

For students interested in furthering their education, these courses are creditable toward our Associate of Applied Science (AAS) and Bachelor of Science in Applied Management (BSAM) degrees. Please see our AAS and BSAM evening program offerings on page 92.

PROGRAM COURSES		Hours	Prerequisites
FWL1100	Fundamentals of Welding Technology	12	
FWL1110	Blue Print Reading and Quality Inspection	2	
FWL1200	Welding Fabrication	12	FWL1100
FWL1210	Fabrication Equipment Technology	3	
Total technical credit hours required		29	
GENERAL EDUCATION COURSES		Hours	Prerequisites
COM1080	Technical Communications	3	
CIT1110	Computer Literacy	2	
WFD1200	Job Search Success	1	

Important Note: Both general education classes must be completed in the first semester. Only courses in which a grade of "C" or higher is earned may be applied toward this Ranken certificate. All students will be required to complete a math pre-course prior to the start of school. Information about the course may be obtained from the admissions office.

COURSE DESCRIPTIONS

FWL1100 Fundamentals of Welding Technology

Introduces students to welding and cutting processes in both theory and shop. The course provides an overview of various techniques, including Shield Metal Arc Welding (SMAW), Flux Cored Arc Welding (FCAW), Gas Metal Arc Welding (MIG/GMAW) and Gas Tungsten Arc Welding (TIG) to be applied on various metals. The emphasis is to develop proper welding techniques in all positions. Students will also learn the procedures for preparing materials using oxy-fuel cutting and carbon arc gouging. By the end of the course, students will be prepared for the American Welding Society (AWS) certification test and vertical SMAW, MIG/GMAW, and FCAW on steel plates. Twelve credit hours

FWL1110 Blue Print Reading and Quality Inspection

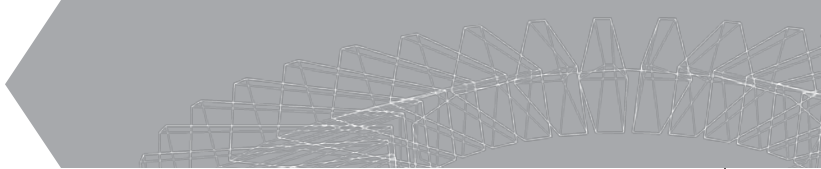
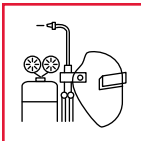
Offers an in-depth study of blueprint reading, students will have a complete understanding of typical weld symbols and the blueprints used throughout the welding industry, as well as, basic weld inspection. Two credit hours

FWL1200 Welding Fabrication

This course builds upon skills and theories learned in the Fundamentals of Welding Technology course. Students lay out, fit, and fabricate metal components to structural forms, as used to manufacture machinery frames, such as bridge parts and custom race car frames. Students will learn the necessary setup and operation of equipment used in chassis and the structural steel fabrication industry. Students will use blueprints to fabricate parts that are commonly found in both the structural steel and chassis fabrication industries. Twelve credit hours

FWL1210 Fabrication Equipment Technology

The setup and operation of equipment used in structural steel and chassis fabrication industries; students learn how to operate machinery such as a Computer Numerical Controlled (CNC) cutting table, iron worker, pipe coping, pipe bending and other metal working equipment. Three credit hours



» fabrication and welding technology

EVENING PROGRAM CERTIFICATE IN PRECISION WELDING AND FABRICATION

The evening program curriculum for Precision Welding and Fabrication includes oxy-acetylene welding, oxy-fuel cutting, shielded metal arc welding (SMAW), gas metal arc welding (GMAW) and gas tungsten arc welding (GTAW). The theory for each of these processes is discussed along with proper joint design and proper welding techniques.

For students interested in furthering their education, these courses are creditable toward our Associate of Applied Science (AAS) and Bachelor of Science in Applied Management (BSAM) degrees. Please see our AAS and BSAM evening program offerings on page 92.

PROGRAM COURSES		Hours	Prerequisites
FWL0110	Welding I	6	
FWL0120	Welding II	6	FWL0110
FWL0231	Advanced Gas Tungsten Arc Welding (GTAW/TIG)	6	FWL0110
FWL0230	Advanced Shielded Metal Arc Welding (SMAW/Stick)	6	FWL0110, FWL0120
FWL0121	Advanced Gas Metal Arc Welding (GMAW/MIG) and Flux Cored Arc Welding (FCAW)	6	FWL0110
FWL0111	Welding Inspection and Print Reading	6	
FWL0122	Structural Fabrication	6	FWL0110
FWL0123	Chassis Fabrication	6	FWL0110
FWL0112	CNC Cutting/Blueprint Reading	6	

Total technical credit hours for certificate completion 54

COURSE DESCRIPTIONS

FWL0110 Welding I

Students will learn the necessary skills for welding and cutting processes used in the welding and fabrication industry. Processes covered in this program include, Shield Metal Arc Welding (SMAW/Stick) welding, Flux Cored Arc Welding (FCAW), Gas Metal Arc Welding (GMAW) and Gas Tungsten Arc Welding (TIG), to be applied on various metals. The emphasis is to develop proper welding techniques in the flat and horizontal positions. The procedures for preparing materials - oxy-fuel cutting and carbon arc gouging, are included in the curriculum. Six credit hours

FWL0231 Advanced Gas Tungsten Arc Welding (GTAW/TIG)

Covers Advanced Gas Tungsten Arc Welding (GTAW/TIG) welding processes by using mild steel, stainless steel and aluminum in all positions. Students will also learn to weld on pipe using the GTAW/TIG process. Six credit hours

FWL0230 Advanced Shielded Metal Arc Welding (SMAW/Stick)

Focuses on the skills for stick welding mild steel pipe in various positions. Students will be prepared to receive a certification in pipe welding. Six credit hours

FWL0120 Welding II

Focuses on the skills required to perform welds in various positions. Students will be introduced to basic metallurgy and basic weld inspection. Students will be prepared for the AWS certification test in vertical Shield Metal Arc Welding (SMAW), Gas Metal Arc Welding (GMAW) and Flux Cored Arc Welding (FCAW) on steel plate. Six credit hours

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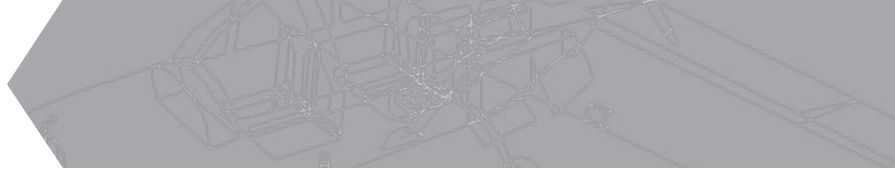
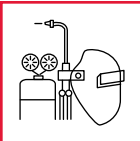
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» fabrication and welding technology

FWLO121 Advanced Gas Metal Arc Welding (GMAW/MIG) and Flux Cored Arc Welding (FCAW)

Develop advanced skills in the Gas Metal Arc Welding (GMAW) and Flux Cored Arc Welding (FCAW) processes. Students will learn to weld on by completing projects, including pipe welding. Students will be prepared to obtain certifications in GMAW and FCAW welding. Six credit hours

FWLO111 Welding Inspection and Print Reading

Offers an in-depth study of blueprint reading and the ability to interpret shop drawings. Students will be introduced to different types of welding inspection and inspection principles, they will learn the metallurgy related to welding. Six credit hours

FWLO122 Structural Fabrication

Focusing on fabricating and the cutting and welding of components in the structural steel fabrication field. Students will learn the necessary setup and operation of equipment used in the industry. They will also learn to fabricate parts by using blueprint formats. Six credit hours

FWLO123 Chassis Fabrication

This course focuses on the ability to cut, weld and fabricate components in the race car chassis field. Students will learn the setup and operation of equipment used in the industry. They will also learn to fabricate parts using blueprint formats. Six credit hours

FWLO112 CNC Cutting/Blueprint Reading

Covers the programming, set up and operation of a plasma cutting table. Students are also prepared in advanced blueprint reading and drawing interpretation. Six credit hours