

# TRADES AND TECHNOLOGY (TTCH)

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## TTCH F101 Machine Woodworking I

2 Credits

Offered As Demand Warrants

Introduction to woodworking power machines (circular saw, jointer, radial arm saw), joints, fasteners, and different stains and finishes used on wood.

**Lecture + Lab + Other:** 2 + 0 + 0

## TTCH F105 Basic Electrical Wiring

1 Credit

Offered As Demand Warrants

Fundamental skills and career opportunities in electrical wiring.

**Lecture + Lab + Other:** 1 + 0 + 0

## TTCH F110 Basic Safety Training for Building Maintenance and Repair

2 Credits

Offered As Demand Warrants

How to care for tools and use them safely, properly and efficiently using HILTI standards, follow OSHA standards to maintain a safe workplace and identify unsafe workplace situations. These standards ensure safety in construction operations. Upon passing the HILTI and OSHA testing standards, certification will be given.

**Lecture + Lab + Other:** 2 + 0 + 0

## TTCH F113 Basic Plumbing

3 Credits

Offered As Demand Warrants

Introduction to methods and materials used in household plumbing. Topics include pipe fittings and valves, pipe hangers and brackets, copper and plastic pipe fitting and plumbing fixtures.

**Lecture + Lab + Other:** 3 + 0 + 0

## TTCH F117A Four-cycle Engine Repair

1 Credit

Offered As Demand Warrants

Four-cycle engine theory and principles of operation. Classroom activities include step-by-step disassembly, inspection and assembly of a four-cycle engine.

**Lecture + Lab + Other:** 1 + 0 + 0

## TTCH F117B Two-cycle Engine Repair

1 Credit

Offered As Demand Warrants

Two-cycle engine theory and principles of operation. Classroom activities include step-by-step disassembly, inspection and assembly as well as familiarization with tools used in small engine repair.

**Lecture + Lab + Other:** 1 + 0 + 0

## TTCH F120 Refrigeration and Air Conditioning

4 Credits

Offered As Demand Warrants

Fundamentals of refrigeration and air conditioning theory in preparation for further study. Topics include compressors, condensers, evaporators, metering devices and related components. Assumes no previous knowledge.

**Lecture + Lab + Other:** 4 + 0 + 0

## TTCH F125 Introduction to Carpentry for Building Maintenance and Repair

3 Credits

Offered As Demand Warrants

Uses of lumber, commonly used hardware fasteners, types of tools and their uses, how to care for tools and use them safely, properly and efficiently. Building projects are completed which apply what was learned in the classroom. These skills are needed in maintenance positions in private businesses, schools and hospitals and in residential construction and renovation.

**Lecture + Lab + Other:** 2 + 2 + 0

## TTCH F130 Blueprint and Schematic Reading

3 Credits

Offered As Demand Warrants

Basic blueprint and schematic reading skills used by building maintenance personnel. Introduction to machine drawings, building drawings, hydraulic and pneumatic drawings, electrical schematics and symbols, air conditioning and refrigeration drawings, welding and joining symbols.

**Lecture + Lab + Other:** 3 + 0 + 0

## TTCH F131 Mathematics for the Trades

3 Credits

Offered Spring

Practical application of mathematics for industry and preparation for union apprenticeship programs, including arithmetic review, ratios and proportion, powers and roots, algebra, geometry and trigonometry. Mathematical applications of basic physics with reference to units of measurement, use of precision measuring tools, measurement of forces, temperature, fluids and electricity.

**Lecture + Lab + Other:** 3 + 0 + 0

## TTCH F132 Building Maintenance Materials

3 Credits

Offered As Demand Warrants

Basic properties, processes and uses of metals and non-metals in tools, machines and building materials. Practical application to building maintenance situations will be emphasized.

**Lecture + Lab + Other:** 3 + 0 + 0

## TTCH F133 Basic Hand and Power Tools

3 Credits

Offered As Demand Warrants

Uses, care and maintenance of hand and power tools. Familiarity and skill development with these tools through construction of shop projects.

**Lecture + Lab + Other:** 3 + 0 + 0

## TTCH F134 Maintenance Safety

1 Credit

Offered As Demand Warrants

Industrial safety including recognizing safety hazards, working safely, handling materials safely, using machinery safely, personal protective equipment, electrical safety, fire protection and government safety regulations.

**Lecture + Lab + Other:** 1 + 0 + 0

**TTCH F138 Introduction to Electricity for Building Maintenance and Repair**

2 Credits

Offered As Demand Warrants

Commonly used materials in the electrical trade. Provides basic understanding of the National Electrical Code, local codes and schematic drawings. Stresses safe installation and correct tool usage. Familiarity and skills are cultivated through projects.

**Lecture + Lab + Other:** 1.5 + 2 + 0**TTCH F140 Introduction to Plumbing for Building Maintenance and Repair**

2 Credits

Offered As Demand Warrants

Basic plumbing materials that may be used in any plumbing system, how to use plumbing tools and completing selected projects. Includes using drawings to identify types of plumbing branches and bends, pipefittings, correct plumbing layout aids, and installation applications.

**Lecture + Lab + Other:** 1.5 + 2 + 0**TTCH F147 Burner Maintenance and Repair**

1 Credit

Offered As Demand Warrants

Instruction in troubleshooting 10 common problems, reading manuals, changing parts, setting electrodes, changing nozzles, understanding controls and ordering replacement parts. Also offered as pass/fail as TTCH F147P.

**Lecture + Lab + Other:** 1 + 2 + 0**TTCH F147P Burner Maintenance and Repair**

1 Credit

Instruction in troubleshooting 10 common problems, reading manuals, changing parts, setting electrodes, changing nozzles, understanding controls and ordering replacement parts.

**Lecture + Lab + Other:** 1 + 2 + 0**TTCH F148 Heating Systems for Building Maintenance and Repair**

2 Credits

Offered As Demand Warrants

Comprehensive instruction for people employed in installation and maintenance of heating systems. Installation and maintenance applications of fuel transfer, theories of combustion, nozzles, combustion chambers, heat exchangers, draft regulators, stacks, controls and sizing of systems.

**Recommended:** TTCH F138.**Lecture + Lab + Other:** 1 + 1.5 + 0**TTCH F150 Introduction to Painting for Building Maintenance and Repair**

2 Credits

Offered As Demand Warrants

Surfaces and surface protection, sealants and fillers, paint categories and application tools. Hands-on projects are completed which apply skills learned in the classroom. These skills are needed in facility maintenance positions in businesses such as schools and hospitals, and in residential construction and renovation.

**Lecture + Lab + Other:** 1 + 1.5 + 0**TTCH F151 Hazardous Paint Certification**

1 Credit

Offered As Demand Warrants

Potential health hazards and information on safety practices will be addressed.

**Lecture + Lab + Other:** 1 + 0 + 0**TTCH F199 Practicum**

1-3 Credits

**Lecture + Lab + Other:** 0 + 0 + 0**TTCH F214 Heating Systems Design**

3 Credits

Offered As Demand Warrants

Comprehensive instruction in installation and systems approach to design of heating systems including installation procedures of current systems, heat loss calculation, heat distribution through hydronic and air systems, and boiler and furnace sizing.

**Lecture + Lab + Other:** 3 + 0 + 0**TTCH F225 Advanced Carpentry for Building Maintenance and Repair**

3 Credits

Offered As Demand Warrants

Expand carpentry skills in measuring, plan reading, site layout skills and working with elevations.

**Prerequisites:** TTCH F125.**Lecture + Lab + Other:** 2 + 2 + 0**TTCH F250 Advanced Painting for Building Maintenance and Repair**

2 Credits

Offered As Demand Warrants

Proper methods for finishing, patching and spray painting drywall. Skills studied in the classroom will be developed in various projects.

**Prerequisites:** TTCH F150.**Lecture + Lab + Other:** 1 + 2 + 0**TTCH F282 Selected Topics in Process Unit Design**

4 Credits

Offered As Demand Warrants

Hands-on execution and application of automated process designs as they evolve from ideas to implementation. Emphasis will be on the expanded study of the purpose, utilization and adaptation of tools, machines, materials and systems to the solutions of automated process unit design problems. Course may be repeated three times for credit.

**Prerequisites:** PRT F101; PRT F110.**Recommended:** PRT F130; PRT F140.**Lecture + Lab + Other:** 2 + 4 + 0**TTCH F299 Practicum**

1-3 Credits

**Lecture + Lab + Other:** 0 + 0 + 0**TTCH F300 Internship in Technology**

1-3 Credits

Offered As Demand Warrants

Supervised practical experience working with private industry, government units or agencies in technologies. Opportunities to apply theories and practical application and to observe procedures and operations of the businesses or agencies. May be repeated for a maximum of 9 credits.

**Prerequisites:** Upper-division standing.**Lecture + Lab + Other:** 0 + 12 + 0

**TTCH F301 Technology and Society**

3 Credits

Offered As Demand Warrants

Concepts of social change related to the effects of technology on society, and application of the concepts and processes of technology as they evolve from ideas to implementation. Emphasis on expanded study of the creation, use and adaptation of tools, machines, materials and systems to the solutions of problems and the extension of human potential.

Available via Independent Learning.

**Prerequisites:** Upper-division standing.**Lecture + Lab + Other:** 3 + 0 + 0**TTCH F485 Advanced Technical Experiences: Discipline Area**

1-6 Credits

Offered As Demand Warrants

Formal technical upgrade training provided by various agencies, manufacturers, businesses or industries which are evaluated on an individual basis and must support the student's professional objectives.

For Bachelor of Technology students only. The National Guide to Educational Credit for Training Programs will be used.

**Prerequisites:** Upper-division standing.**Lecture + Lab + Other:** 1-6 + 0 + 0