



## Student Catalog Addendum

This catalog addendum updates the program descriptions for the HVAC/CR Technologies and Automotive Technology programs and adds the following information to the Satisfactory Academic Progress (SAP) Policy and Grading Procedures section in the 2021-2022 Student Catalog:

### Satisfactory Academic Progress (SAP) Policy

This addendum adds the following rule to the preface of the catalog's existing Satisfactory Academic Progress Policy, on page 29, expanding on the SAP grade and attendance requirements.

**NOTE:** Students that fail two (2) consecutive modules, due to either poor grades or poor attendance, will be terminated from their program of study.

### Grading Scale

This update simplifies and clarifies ATI's Grading Scale, both in the Grading Procedures section and throughout the Student Catalog.

Grade	Description	Scale	Points
A+	Excellent	98-100%	4.0
A	Excellent	93-97%	3.8
A-	Excellent	90-92%	3.6
B+	Good	87-89%	3.2
B	Good	83-86%	3.0
B-	Good	80-82%	2.8
C+	Fair	78-79%	2.6
C	Fair	73-77%	2.4
C-	Fair	70-72%	2.0
F	Failing	0-69%	0
N	Audit		
TC	Transfer Credit		
EC	Exam Credit		
TO	Transfer Out		

### Calculation of GPA

ATI uses clock hours only. The overall GPA is determined with a weighted average of the clock hours times the earned points for each course. The table below shows the points used per grade.

Students earn Grade 'Points' for Grades "A+" through "C-". Students need a "C-" grade or better in each module to graduate. A module graded with an "F" must be retaken. When a module is retaken, only the retake grade is counted as credit attempted and used in the cumulative GPA calculation. Repeated weeks will be used in the computation of any refund.

Grades of "N", "TC" and "EC" are not used to compute the GPA but show on the transcript.

# Updated Program Descriptions

## HVAC/CR Technologies\*

### HVAC/CR Technologies – IDL (Interactive Distance Learning)\*

#### Diploma Program – 840 Hours

\*Note: This program is available as either a traditional in-classroom program or as a hybrid online program. Both versions of the program have the same curriculum and time commitment. (Consult Admissions Department for details.)

#### Vocational Objective:

Available as either a traditional in-classroom program or as a hybrid online program, ATI's HVAC/CR Technologies program will prepare students for entry-level residential air-conditioning and heating technician and commercial refrigeration technician positions. Students will learn mechanical and electrical troubleshooting and circuit repair on residential and light commercial equipment; residential and light commercial condensing unit, compressor and evaporator fan motor replacement; installation and repair on residential and light commercial gas heating systems; service and repair of electric and hydronic heating systems; and how to calculate and measure airflow on a/c equipment, as well as service and repair of ice machines, walk-in coolers/freezers and reach-ins. Additionally, students will earn Section 608 certification and learn how to maintain EPA regulations when troubleshooting and repairing residential and light commercial equipment.

Successful completion of this program will prepare you for entry-level work with: air conditioning/heating companies, hospitals, hotels, manufacturers, mechanical contractors, and schools.

#### **Course Requirements**

Course Description	Hours
HV301 Mechanical Principles	120
HV302 Applied Electricity for HVAC	120
HV303 Gas Fired Heating Systems & Boiler Operation	120
HV304 Air Conditioning Systems	120
HV307 Heat Pump Systems	120
HV305 Commercial Refrigeration & Ice Machines	120
HV306 Troubleshooting, Start-Up & Installation	120

#### **In-Classroom and Hybrid Online Time Commitment**

Normal program length is 42 weeks—Maximum Time Frame is 63 weeks.

Whether students enroll in this program as a traditional in-classroom program or as a hybrid online program, which is taught partially online and partially in-classroom, the curriculum and the time commitment are the same. All students will have a weekly time commitment of 20 hours of lecture and lab on one of the schedules included in the table below. However, hybrid online students will attend some or all of their scheduled lectures live online. The course outline for each module will explain the specific lab and lecture schedule for that module.

Session	Class Time	Hours/Day	Days
AM	7am-12 noon	5	Mon-Thurs
AFT	12:15pm-5:15pm	5	Mon-Thurs
EVE	5:30pm-10:30pm	5	Mon-Thurs
Make-up Work	8am-5pm	Voluntary	Wednesday or Friday

### **Equipment used in this program**

- Air Conditioning Units
- Heat Pumps
- Welding Lab
- Simulated Trainers
- Ice Machine Trainers
- Natural Gas Furnaces
- Networked Computer Lab

### **Entry-Level Job Descriptions**

The graduate of the HVAC/CR Technologies program is qualified for positions with the following title:

<b>*Standard Occupational Classification (SOC)</b>	<b>Employment Position</b>
49-9021.01	Entry-Level Residential Air-Conditioning and Heating Technician
49-9021.02	Entry-Level Commercial Refrigeration Technician

\* All SOC codes are accurate for the 2018 system and are available at:

<http://www.bls.gov/soc/#classification>

The entry-level commercial and refrigeration technician is one who performs installation and start-up, preventive maintenance, and/or service and repair. The technician understands system design principles. He/she can do installation, start-up and preventive maintenance with relatively minor supervision, if any. The entry-level technician is supervised when servicing equipment.

Commercial and refrigeration equipment includes display cases, walk-in boxes, reach-in boxes, coolers, ice cream machines, ice machines, air conditioners, etc.

### **Course Descriptions**

#### **HV301 Mechanical Principles**

*120 Clock Hours (72 Lecture + 48 Lab)*

This course introduces the student to the field of refrigeration and air conditioning. This course will provide instruction on thermodynamics, heat transfer, pressure and temperature relationships, and the fundamentals of refrigeration. The student will learn the major components and accessories of the sealed system including metering devices, evaporators, compressors and condensers. In this course the student will also learn the core section of EPA regulatory under section 608 of the Clean Air Act, as they relate to refrigerants and refrigerant handling. Emphasis is placed on principles of safety practices and the identification and purpose of the hand and power tools utilized in the field by HVAC/CR technicians. The practices for oxy acetylene torch safety are emphasized along with different techniques for connecting tubing such as brazing and soldering copper refrigerant lines and the proper procedures for cutting, bending, swaging and flaring in the air conditioning field. **Prerequisite:** None

#### **HV302 Applied Electricity for HVAC**

*120 Clock Hours (72 Lecture + 48 Lab)*

This course introduces the beginning HVAC/CR student to basic electrical concepts. It establishes a thorough understanding of electron theory, voltage, current, resistance, ohms law, magnetism, mathematical concepts and common units of electrical measurement. It also covers basic circuit design of series, parallel and combination circuits. This course also introduces the student to the different electrical symbols used in electrical wiring. Through these symbols, the student will be able to interpret, read electrical diagrams and the use of different types of meters for troubleshooting. Also this course will provide instruction on the various types of electric motors and their applications. Topics consist of single and three-phase motors, capacitor start/run motors, and variety of different controls to start and stop these motors application. **Prerequisite:** None

### **HV303 Gas Fired Heating Systems & Boiler Operation**

*120 Clock Hours (72 Lecture + 48Lab)*

The purpose of this course is to provide students with the basics of gas fired heating. The topics covered in this course are geared toward the residential and commercial package unit forced air heating systems. The student will be exposed to the central heating system mechanical and electrical safety, types of gas and fuel used, function of controls, combustion efficiency tests, gas pressure adjustment and proper ventilation. The class will familiarize the student with different boiler room design and hydronic heating systems, focusing on controls and the safe operation of support equipment. Extensive hands on troubleshooting and electrical wiring diagrams are used to prepare the student for field service. **Prerequisite:** HV302

### **HV304 Air Conditioning Systems**

*120 Clock Hours (72 Lecture + 48 Lab)*

This course covers Air Conditioning split systems and roof top package units. It will teach the students the normal refrigeration cycle for air conditioning units and their various components. Charging methods will be covered which include superheat, sub-cooling, weigh-in and dial-a-charge. This course will also include service and repair of air conditioning systems using mechanical and electrical troubleshooting techniques and electrical wiring diagrams interpretation, and specialized system components. Upon completion the student should be able to service and repair residential air conditioning systems. **Prerequisite:** HV301 and HV302

### **HV307 Heat Pump Systems**

*120 Clock Hours (72 Lecture + 48 Lab)*

Instruction received in this course centers around the basic theory and application of heat pump systems and components. The student will learn how the reverse cycle for air conditioning units is applied in heat pump and their various components. The student also learn what is C.O.P., E.E.R., S.E.E.R rating. This course teaches the student various defrost methods including time, temperature, demand, air switch and other defrost integrated circuit board controls. Upon completion, students will be able to install and service heat pumps in wide variety of applications. Charging methods will be covered which include superheat, sub-cooling, weigh-in and dial-a-charge. This course will also include service and repair of air conditioning and heat pump systems using mechanical and electrical troubleshooting techniques, electrical wiring diagrams interpretation, and specialized system components. Electric heat and control sequencers for auxiliary and emergency heat are covered. The student will be able to describe how sequencers operate in an electric furnace and troubleshoot their electric circuitry. **Prerequisite:** HV301, HV302 and HV304

### **HV305 Commercial Refrigeration & Ice Machines**

*120 Clock Hours (72 Lecture + 48 Lab)*

This course introduces refrigeration systems and applications. Topics include defrost methods, safety and operational control, refrigerant piping, refrigerant recovery and charging, and leak testing. This course covers the installation and start up of common commercial refrigeration systems. Topics include display/storage boxes or cases, walk-in systems, supermarket racks. In addition to that this course introduces the students to commercial ice machines. Emphasis is placed on dispensing machines, ice-making equipment, electrical and mechanical operation sequences, control adjustment procedures, preventive maintenance, repairs, and installation procedures using variety of refrigerants and blends. **Prerequisite:** HV301 through HV304

### **HV306 Troubleshooting, Start-Up & Installation**

*120 Clock Hours (72 Lecture + 48 Lab)*

This course provides instruction on general service and installation of all HVAC systems. Topics include testing, adjusting, maintaining, and troubleshooting HVAC equipment. Emphasis is placed on preventive maintenance procedures for heating and cooling equipment and related components. The student will be able to perform an actual service call and diagnose a simulated real life troubleshooting call. Upon completion, students should be able to perform routine preventive maintenance tasks, maintain records, and assist in routine equipment repairs. Also this course introduces the students to residential and commercial air conditioning systems installation procedures. Emphasis is placed on proper installation techniques required by code, and duct installation. Upon completion the student should be able to properly install and start up an air conditioning unit. **Prerequisite:** HV301 through HV304

## **Automotive Technology\***

### **Automotive Technology – IDL (Interactive Distance Learning)\***

#### **Diploma Program – 1200 Hours**

**\*Note: This program is available as either a traditional in-classroom program or as a hybrid online program. Both versions of the program have the same curriculum and time commitment. (Consult Admissions Department for details.)**

#### **Vocational Objective:**

Available as either a traditional in-classroom program or as a hybrid online program, ATI's Automotive Technology program will prepare students for entry-level automotive technician positions with the basic knowledge and skills required to diagnose malfunctions in the complete automotive mechanical and electrical systems, and make all necessary repairs and replacements. Students will learn how to test parts and systems to ensure that they are working properly, identify mechanical problems, often by using computerized diagnostic equipment, perform basic care and maintenance, including oil changes, tune-ups, and tire rotations, repair or replace worn parts, such as brake pads and wheel bearings, disassemble and reassemble parts, and use testing equipment to ensure that repairs and maintenance are effective, as well as the customer service skills to explain automotive problems and repairs to clients. Additionally, students will earn their Section 609 certification and learn how to maintain EPA regulations when troubleshooting and repairing Automotive and light commercial equipment.

Successful completion of this program will prepare you for entry-level work with: automotive repair facilities, auto dealerships, tune up facilities, manufacturers, corporate/ in-house facility, or public transportation facilities.

#### **Course Requirements**

Course Description	Hours
AT201 Automotive Industry and Basic Engines	120
AT202 Basic Electricity For Automotive	120
AT203 Brakes	120
AT204 Chassis	120
AT205 Automotive Heating and Air Conditioning	120
AT206 Clutch, Drive Train, and Transmissions	120
AT207 Engine Performance 1	120
AT208 Engine Performance 2	120
AT209 (Elective 1) Automotive & light truck Diesel Engine Technology I	120
AT210 (Elective 1) Automotive & light truck Diesel Engine Technology II	120
AT211 (Elective 2) Advanced Engine Performance	120
AT212 (Elective 2) Hybrid and Alternative Fuel Vehicles	120

#### **In-Classroom and Hybrid Online Time Commitment**

Normal program length is 60 weeks–Maximum Time Frame is 90 weeks.

Whether students enroll in this program as a traditional in-classroom program or as a hybrid online program, which is taught partially online and partially in-classroom, the curriculum and the time commitment are the same. All students will have a weekly time commitment of 20 hours of lecture and lab on one of the schedules included in the table below. However, hybrid online students will attend some or all of their scheduled lectures live online. The course outline for each module will explain the specific lab and lecture schedule for that module.

Session	Class Time	Hours/Day	Days
<b>AM</b>	7am-12 noon	5	Mon-Thurs
<b>AFT</b>	12:15pm-5:15pm	5	Mon-Thurs
<b>EVE</b>	5:30pm-10:30pm	5	Mon-Thurs
<b>Make-up Work</b>	8am-5pm	Voluntary	Wednesday or Friday

## **Equipment used in this program**

- Post Hoists
- Alignment Machines
- Tire Machines
- Computerized Wheel Balancers
- Simulated Trainers
- Automotive A/C Servicing System
- Bi -Directional diagnostic scan tool
- Brake Lathe
- Fuel System Testing Kit
- Cooling System diagnosis and Service machine
- Engine Stands
- Compression testers
- Oil pressure tester
- Networked Computer Lab

## **Entry-Level Job Descriptions**

The graduate of the Automotive Technology program is qualified for positions with the following title:

<b>*Standard Occupational Classification (SOC)</b>	<b>Employment Position</b>
49-3020	Entry-Level Auto Technician
49-3023.02	Automotive Air-Conditioning Repairers
49-3023	Brake Repairers
49-3023	Front-End Mechanics
49-3023	Drivability Technician

\* All SOC codes are accurate for the 2018 system and are available at:

<http://www.bls.gov/soc/#classification>

The entry-level Service technician will work on traditional mechanical components, such as engines, transmissions, belts, and hoses. However, they must also be familiar with a growing number of electronic systems. Braking, transmission, and steering systems, for example, are controlled primarily by computers and electronic components.

Other integrated electronic systems, such as accident-avoidance sensors, are becoming common as well. In addition, a growing number of technicians are required to work on vehicles that run on alternative fuels, such as ethanol and electricity. Service technicians use many different tools, including computerized diagnostic tools and power tools such as pneumatic wrenches, lathes, welding torches, and jacks and hoists. These tools usually are owned by their employers.

Service technicians also use many common hand tools, such as pliers, wrenches, and screwdrivers, which generally are their own. In fact, experienced workers often have thousands of dollars invested in their personal tool collection.

Service technicians sometimes specialize in a particular type of repair that may be subject to specific regulations or procedures. For instance, those focused on air-conditioning system repairs must follow federal and state regulations governing the handling, recycling, and disposal of refrigerants.

## **Course Descriptions**

### **AT201 Automotive Industry and Basic Engines**

*120 Clock Hours (72 Lecture + 48 Lab)*

This course introduces the beginning Automotive Technology student to the history of the automotive industry, tools and safety, and basic engine repairs. Students will learn the basic engine, including types, measurements, lubrication and cooling systems. Students will learn the importance of timing including belt replacement and engine mechanical diagnosis. They will be able to use precision measuring tools and determine the necessity of replacement of engine parts. Also this course will provide instruction on the various types of automotive engines and their applications. Students disassemble, test and reassemble an engine. Student will learn the operation and function of intake and exhaust systems. Student will explain turbo and superchargers and their usage.

**Prerequisite:** None

### **AT202 Basic Electricity for Automotive**

*120 Clock Hours (72 Lecture + 48 Lab)*

This course introduces Basic Electrical systems used in automobiles; it includes understanding DC voltage and the basic theory of electricity. Students will learn the lighting system and wiring of an automobile. They will be able to explain the construction and operation of the Battery, charging and starting systems. Students will be able to aim headlights, and diagnose and repair automotive wiring and accessory circuits. Supplemental Restraint Systems are also covered. **Prerequisite:** None

### **AT 203 Brakes**

*120 Clock Hours (72 Lecture + 48Lab)*

This course introduces the brake systems, from base brake to antilock. We will also cover traction control and stability control. Students will be measuring drums and rotors and be able to diagnosis common brake problems. Also they will cover bearings and seals used in front wheel and rear wheel drive vehicles. Student will be able to safely use all of the equipment and be able turn rotors including using the on car brake lathe and machining drums. **Prerequisite:** AT201 and AT202

### **AT204 Chassis**

*120 Clock Hours (72 Lecture + 48 Lab)*

This course introduces students to the areas of suspension theory, application, and steering. They will be able to diagnose, repair and service suspension system. They will be able to diagnose, and repair steering systems, including rack-and-pinion systems. They will learn the importance of alignment on a vehicle, and be able to perform proper alignments. Students will learn to mount, dismount tires from various tire changing machines and repair tires. This course covers the importance of static and dynamic wheel balance. **Prerequisite:** AT201 and AT202

### **AT205 Automotive Heating and Air Conditioning**

*120 Clock Hours (72 Lecture + 48 Lab)*

This course introduces students to the areas of heating and air conditioning systems. They will inspect diagnosis and repair air conditioning and heating systems. Students will learn the cooling system of the vehicle and how it relates to the proper operation of the heating and A/C system in a vehicle. Student will learn to recover, recycle and charge systems correctly. They will know how to properly handle refrigerant as dictated by the EPA. Students will be able to diagnose the electrical systems used in heating and A/C of vehicles. Student will be able to diagnosis and repair belts, and hoses. **Prerequisite:** AT201 through AT202

### **AT206 Clutch and Drive Train and Transmission**

*120 Clock Hours (72 Lecture + 48 Lab)*

Students in this course will learn to evaluate and diagnose Clutch and drive train problems. They will learn to remove repair and replace clutch components, drive axles, manual transmissions and transaxles. Students will learn FWD operation and repair, including driveshaft and joints used. They will learn about 4WD application, operation and repair that include unlocking hubs. Students will be able to determine whether repair or replacement of components is necessary and perform those tasks. Students in this course will also learn the operation of automatic transmissions and transaxles. Students will be able to properly service automatic transmissions and perform in car repairs. **Prerequisite:** AT201 through AT202

### **AT207 Engine Performance I**

*120 Clock Hours (72 Lecture + 48 Lab)*

Students in this course will learn to evaluate and diagnose electronic systems, using scan tools and electrical meters. They will explain, diagnose and repair ignition systems. They will be discussing petroleum fuels and some other fuel technologies. Student will be able to diagnosis and repair fuel systems including fuel pumps and gasoline direct injection. Students in this course will also learn the eight step diagnostic process, they will be able to pull trouble codes and explain their meaning. Students will diagnosis computer controlled systems used in the automotive industry. Students will identify computer controlled sensors and outputs. They will be able to explain how the different sensors effect the computer controlled engine. **Prerequisite:** AT201 through AT204

### **AT208 Engine Performance II**

*120 Clock Hours (72 Lecture + 48 Lab)*

Students in this course will learn to evaluate and diagnose electronic systems, using scan tools and electrical meters. They will be discussing petroleum fuels and some other fuel technologies. Student will be able to diagnosis

and repair fuel systems. Student will diagnosis and repair EVAP systems as well as exhaust recirculation, air injection systems and catalytic converters. Students in this course will also learn the eight step diagnostic process, they will be able to pull trouble codes and explain their meaning. Students will diagnosis computer controlled systems used in the automotive industry. They will explain CAN and NETWORK communications. They will understand OBD and mode \$06 systems. They will be able to explain and use oscilloscopes and graphing multi-meters. Students will identify computer controlled emission systems. Students will cover the state of Nevada 1G emissions inspector preparatory certification. **Prerequisite:** AT201 through AT204

### **AT 209 (Elective 1) Automotive & Light Diesel Engine Technology I**

*120 Clock Hours (72 Lecture + 48 Lab)*

Students in this course will learn the theory, diagnosis and repair and development of automotive diesel engines. Student will be able to explain compression ignition combustion. Explain the diesel engine components, including design and construction of the cylinder heads, block and internal components. Students will be able to discuss the emissions and standards that are presently used in the industry. Students will explain the diesel engine cooling and oiling systems and various differences with that of gas engines. Students will be able to recommend reconditioning or repairs of the various diesel engine components. Student will be able identify types of high-pressure injection systems found in light duty diesel applications. **Prerequisite:** AT201 through AT204

### **AT210 (Elective 1) Automotive & Light Diesel Engine Technology II**

*120 Clock Hours (72 Lecture + 48 Lab)*

Students in this course will learn the theory, diagnosis and repair of diesel fuel systems. Student will be able to explain the Common Rail High Pressure Fuel Injection System. We will also discuss the theory and repair of fixed, wastegate and variable vane turbochargers. Students will also be able to explain and use onboard diagnostics for diesel engines. Exhaust Gas Recirculation and exhaust after treatments systems are also covered. **Prerequisite:** AT201 through AT204

### **AT211 (Elective 2) Advanced Engine Performance**

*120 Clock Hours (72 Lecture + 48 Lab)*

This course introduces students to the areas of Advanced Engine Performance. The students will inspect and diagnose engine performance related symptoms. Also perform emission failure diagnosis. Testing OBD systems using multiple scan tools and use bi-directional controls. Oscilloscope use on ignition and fuel systems. Use of multiple meters and methods to trace wiring problems such as opens and shorts. **Prerequisite:** AT201 through AT204

### **AT212 (Elective 2) Hybrid and Alternate Fuel Vehicles**

*120 Clock Hours (72 Lecture + 48 Lab)*

Students in this course will learn the theory, diagnosis and repair information that is needed for students to work safely and effectively on these types of vehicle. This includes first responder safety tips when dealing with these vehicles and the high voltage that they use. Student will also complete a compressive skills review of the automotive program. **Prerequisite:** AT201 through AT204