

AUTOMOTIVE TRANSPORTATION TECH (ATT)

ATT 111 Introduction to Auto Body Repair (4 Credits)

ATT

In this course students will learn industry standard repair procedures, vehicle damage assessment, and proper tool selection to aid in the repair of collision damaged automobiles. Students will also be introduced to the automotive finishing process and provided with hands-on training for body panel repair and alignment, plastic welding and MIG welding. This entry level, self-paced course will focus on preparing students for a career in the automotive collision repair industry. This course was previously ABR 111. Level I Prerequisite: Academic Reading and Writing Levels of 6

ATT 112 Introduction to Automotive Refinishing (4 Credits)

ATT

In this course, students will build their knowledge for a career in the automotive refinishing industry. Students will be exposed to today's industry standard methods, such as learning how to apply base and clear systems, single stage coatings, primers, and sealers. This is an entry level, hands-on, self-paced course where students will learn panel preparation, proper mixing of sprayable materials, proper spray gun techniques and industry safety procedures. This course was previously ABR 112. Level I Prerequisite: Academic Reading and Writing Levels of 6

ATT 114 Applied Transportation Welding (2 Credits)

ATT

In this course, students will develop and apply basic welding and metal inert gas (MIG) brazing skills associated with crash damaged panel replacement as related to the collision repair industry. Areas of study will include proper equipment selection and set up, fitment of panels to be welded, and plasma cutting procedures. Emphasis will be placed on producing Inter-Industry Conference on Auto Collision Repair (I-CAR) acceptable MIG welding of steel and aluminum butt, lap, and plug welds completed in various welding positions. Students will also be introduced to MIG brazing using various grades of steel. This course was previously ABR 114. Level I Prerequisite: Academic Reading and Writing Levels of 6

ATT 119 Introduction to Metal Shaping (2 Credits)

ATT

In this course, students will be introduced to the working of sheet metals by hand. In addition to skillful handling of tools, students must possess a thorough knowledge of the properties and behavior of materials, to ensure they move in the desired direction when worked. Areas of study will include sheet metal shaping using hand tools over wood forms, anvils, and sand/shot bags. Students will create several handmade parts using a variety of sheet metal materials with varied thickness and hardness. This course was previously ABR 119. Level I Prerequisite: Academic Reading and Writing Levels of 6

ATT 121 Automotive Estimating (2 Credits)

ATT

In this course, students will develop skills in repair estimation associated with collision damaged vehicles. Skills acquired will include handwritten estimation along with the use of software specifically developed for the auto body repair industry. Damage assessment, parts compilation, calculation of repair costs, and refinishing information are some of the topics that will be covered. This course was previously ABR 121. Level I Prerequisite: Academic Reading and Writing Levels of 6; ATT 123 or ATT 124, minimum grade "C"

ATT 123 Technical Auto Body Repair (4 Credits)

ATT

In this course, students will explore all aspects of body panel modification including fender sectioning, door skinning and outer panel replacement. In addition, students will use specialty equipment such as a hydraulic ram to demonstrate basic "bumping" techniques. Students will also learn sheet metal welding and cutting processes as well as how to correctly set up and use a frame straightening machine. Emphasis is placed on quality, craftsmanship and excellent work habits. This course was previously ABR 123. Level I Prerequisite: Academic Reading and Writing Levels of 6; ATT 111 minimum grade "C"

ATT 124 Technical Automotive Refinishing (4 Credits)

ATT

In this course, students will learn refinishing techniques to advance their fundamental skills learned in previous courses. Operations such as proper spraying techniques for the application of metallic colors, spot repairs, color blending, single stage, base-coat/clear-coat systems, tri-coat finishes, and specialty products will be covered. Basic custom paint, detailing, and advanced color mixing and matching will also be covered. Lab assignments will include the proper surface preparation of a vehicle's entire front clip. This course was previously ABR 124. Level I Prerequisite: Academic Reading and Writing Levels of 6; ATT 112 minimum grade "C"

ATT 130 Automotive Service (4 Credits)

ATT

In this course, students will learn basic shop safety and accepted shop practices in the transportation industry. In addition to basic maintenance, students will learn about fluids and lubrication services as well as cooling and exhaust system repairs. Students will also be introduced to basic steering, suspension, and brake repairs in the lab. This course was previously ASV 130. Level I Prerequisite: Academic Reading Level 5; Academic Writing Level 3

ATT 131 Automotive Electrical (4 Credits)

ATT

In this course, students will learn basic electrical theory, electrical safety of low and high voltage systems, use and interpretation of automotive wiring diagrams, and use of electrical testing equipment. Students will learn the skills needed to diagnose and replace a number of commonly serviced electrical components. The focus of this course allows students to gain practical experience in the laboratory. This course was previously ASV 131. Level I Prerequisite: Academic Reading Level 5; Academic Writing Level 3

ATT 132 Automotive Engines (4 Credits)

ATT

In this course, students will explore the theory, operation and repair of automotive gasoline engines with emphasis on component identification, operation and proper measurement techniques. Students will gain skills such as disassembly, reassembly and running procedures with automotive drivetrains on test stands and also develop practical skills with on-car diagnostics and repairs. This course was previously ASV 132. Level I Prerequisite: Academic Reading and Writing Levels of 6; ATT 130 or ATT 131, minimum grade "C"

ATT 133 Automotive Fuel Systems (4 Credits)

ATT

In this course, students will be introduced to the theory and operation of fuel delivery as well as emissions systems and their components. Using specialized diagnostic test equipment, students will develop skills to inspect, diagnose, and perform services on fuel delivery and emission systems. Safe component replacement and repair procedures will also be covered. This course was previously ASV 133. Level I Prerequisite: Academic Reading and Writing Levels of 6; ATT 131 minimum grade "C"

ATT 134 Automotive Transmissions (4 Credits)

ATT

In this course, students will discover how automatic and manual drivetrain systems operate. In the lab, students will develop an understanding on how to service, diagnose and replace faulty internal transmission and drivetrain components. Topics will also include drivetrain function and differences in both 2 and 4-wheel drive vehicles as well as identification, diagnosis and repair of major driveline components that affect transmission operation. This course was previously ASV 134. Level I Prerequisite: Academic Reading and Writing Levels of 6; ATT 130 minimum grade "C"

ATT 135 Transportation Facility Operations (3 Credits)

ATT

In this course, students will develop the skills needed to execute management level transactions in automotive technical and service environments. Students will learn about safety topics that pertain to working in the automotive industry and gain knowledge about mechanic and repair facility licensing requirements. Students will also review the standards, guidelines, and expectations in place at the state and national levels. This course was previously ASV 135. Level I Prerequisite: Academic Reading and Writing Levels of 6

ATT 136 History of Transportation Technologies (3 Credits)

ATT

In this course, students will explore the historical and technological changes associated with internal combustion and electric vehicles from their inception in the 1800s through the 21st century. Topics include, but are not limited to, mass production, evolution of powertrain systems, organized labor, the Great Depression, iterations of body style, the interstate highway system, the energy crisis of the 1970s, development of emission control systems, the influx of foreign competition, and the aftermath of the 2008 economic crisis and its effect on the automotive industry. Aspects of manufacturing, changing technology, and consumer demand will be addressed within this sociocultural and historical context. Level I Prerequisite: Academic Reading and Writing Levels of 6

ATT 140 Aluminum Welding for Transportation Applications (4 Credits)

ATT

In this course, students will develop skills and techniques associated with the cosmetic and structural repair of modern collision-damaged vehicles. Students are introduced to the welding process and equipment used to weld aluminum panels and coupons of varying thickness. Safe welding techniques, site preparation, tool choice and other Inter-Industry Conference on Auto Collision Repair (I-CAR) and National Automotive Technicians Education Foundation (NATEF) rules will be covered. This course was previously ABR 140. Level I Prerequisite: Academic Reading and Writing Levels of 6; ATT 114 minimum grade "B"

ATT 150 Custom Painting (4 Credits)

ATT

In this course, students will learn techniques such as air brushing and color theory along with the creation of custom graphics, murals and etching. Students will use special effect colors such as pearls and candies on lab assignments that were expertly developed to help participants succeed in the field of custom painting. Students must purchase their own air brush. This course was previously ABR 130. Level I Prerequisite: Academic Reading and Writing Levels of 6; ATT 112 minimum grade "B"

ATT 174 ATT Co-op Education I (1-3 Credits)

ATT

In this course, students will gain skills from a new experience in an approved, compensated position in the field of automotive service technology. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. Students will develop skills in each of the following four areas: critical thinking, transportation-related technical knowledge, communication, and professionalism. This is the first of two possible co-op experiences. This course was previously ASV 174. Level I Prerequisite: Academic Reading and Writing Levels of 6; consent required

ATT 180 Alternative Vehicle Fundamentals & Safety (2 Credits)

ATT

In this course, students will learn about various alternative energy vehicles used in the transportation industry. Topics of study will include the history and types of alternative energy used in the transportation industry, electric vehicle (EV) and component identifications, and the safety standards and practices needed when working around vehicles and components. Students will also explore current trends and myths surrounding this rapidly evolving sector of vehicles. Level I Prerequisite: Academic Reading and Writing Levels of 6

ATT 201 Lightweighting Composite Repair (4 Credits)

ATT

In this course, students learn about composite materials and their uses in modern vehicles. Students are introduced to material types (such as resins with reinforcing carbon fiber) and their construction uses, specialty equipment, and the importance of vacuum bagging. Additionally, students will develop and execute project plans to build composite parts such as a composite laminate and a 3D laminate utilizing a core material. This course was previously ABR 201. Level I Prerequisite: Academic Reading and Writing Levels of 6; ATT 111 or ATT 131, minimum grade "C"

ATT 209 Advanced Metal Shaping (2 Credits)

ATT

In this course, students will work individually and as a team to complete projects made from various types of metal. Areas of study will include: sheet metal shaping with hand and power tools over wooden "bucks," and layout of multi-piece projects through the use of cardboard templates, then transferred to metal. Procedures used in this class will consist of riveting, bell flanging, welding, English wheel and many others. This course was previously ABR 209. Level I Prerequisite: Academic Reading and Writing Levels of 6; ATT 119 minimum grade "B"

ATT 220 Dynamometer Operations (4 Credits)

ATT

In this course, students will learn to identify the components and operation of a load control powersports chassis dynamometer. The primary emphasis is on the student learning to use the dynamometer as a diagnostic, data acquisition, and tuning tool. The course will instruct students in the design and application of various tuning technologies used in fuel and ignition mapping. Students will practice and develop the skills to become proficient in diagnosing runnability issues and tuning carbureted vehicles. This course was previously MST 220. Level I Prerequisite: Academic Reading and Writing Levels of 6; ATT 277 minimum grade "C", may enroll concurrently

ATT 225 Advanced Dynamometer Tuning Systems (4 Credits)

ATT

In this course, students will learn the skills necessary to operate a load control dynamometer as an advanced diagnostic and tuning tool. The primary emphasis is on teaching students to use the dynamometer to troubleshoot and tune fuel injection systems on motorcycles and All-Terrain Vehicles (ATVs). Through the use of advanced testing techniques, students will learn to diagnose drivability issues and develop mapping strategies used by both original equipment manufacturers (OEMs) and aftermarket companies. This course was previously MST 225. Level I Prerequisite: Academic Reading and Writing Levels of 6; ATT 220 minimum grade "C"

ATT 231 Project Management and Implementation in Auto Body (4 Credits)

ATT

In this course, students will develop and implement a project plan for specific auto body applications. Students will practice identifying project tasks, skill levels required, costs, necessary materials and the time needed to complete the project. Following the development of the project plan, students will track their progress as they apply their skills and abilities to complete these tasks in a real-world atmosphere. This course was previously ABR 231. Level I Prerequisite: Academic Reading and Writing Levels of 6; ATT 123 and ATT 124, minimum grade "C"

ATT 240 Machining for Transportation Applications (3 Credits)

ATT

In this course, students will be introduced to manual machinist tooling and operations for transportation applications. Students will be introduced to various material properties, basic component blueprint design, precision measuring tool applications, precision layout and set up, as well as the safe operation of manual lathes, mills, drills and a variety of other machine tools to manufacture precision parts. This course was previously MST 230. Level I Prerequisite: Academic Reading and Writing Levels of 6

ATT 251 Engine Diagnosis and Repair (2 Credits)

ATT

In this course, students will learn how to diagnose and repair automotive engine mechanical systems using precision measuring tools and manufacturers' recommendations. The focus of the course will involve the use of industry approved techniques and various skills in assessing engine condition before performing repairs. Students will also learn symptom diagnostic skills related to internal engine systems such as oil pressure issues, cooling system conditions, and vehicle emissions. This course was previously ASV 251. Level I Prerequisite: Academic Reading and Writing Levels of 6; ATT 132 minimum grade "C"

ATT 254 Suspension and Steering Systems (2 Credits)

ATT

In this course, students will learn the theory and operation of vehicle suspension and steering systems. Students will develop the skills to diagnose, maintain and repair faulty components and systems. Students will also test, evaluate and service major suspension and steering components. Students will build skills such as component replacement, recognize the symptoms of vehicles requiring a 4-wheel alignment and properly perform alignments using industry-standard equipment. This course was previously ASV 254. Level I Prerequisite: Academic Reading and Writing Levels of 6; ATT 130 minimum grade "C"

ATT 255 Brake Systems (2 Credits)

ATT

In this course, students will develop skills in diagnosing and repairing brake systems on vehicles, including hydraulic, mechanical, and electrical component systems. Additional topics will include but are not limited to; diagnosis and repair of anti-lock brake components and systems, stability control components and systems, and traction control systems. This course was previously ASV 255. Level I Prerequisite: Academic Reading and Writing Levels of 6; ATT 130 minimum grade "C"

ATT 256 Electrical and Electronic Systems (4 Credits)

ATT

In this course, students learn the theory and operation of automotive electrical systems. Students will develop skills in the areas of diagnostics and repair of automotive electrical lighting, instrumentation, convenience and accessory systems. Other areas of focus will include advanced tools and techniques used to diagnose electrical and electronic systems found in current automobiles. This course was previously ASV 256. Level I Prerequisite: Academic Reading and Writing Levels of 6; ATT 131 minimum grade "C"

ATT 257 Heating and Air Conditioning Systems (2 Credits)

ATT

In this course, students will explore automotive heating and air conditioning (A/C) systems, including servicing procedures and diagnostic techniques. Students will perform A/C system diagnosis and repair with a focus on the multiple types of control systems used in current automobiles. This course also covers the proper use, recovery, and recycling of current refrigerants. This course was previously ASV 257. Level I Prerequisite: Academic Reading and Writing Levels of 6; ATT 130 minimum grade "C"

ATT 258 Engine Drivability (2 Credits)

ATT

In this course, students will develop automotive troubleshooting and repair strategies for engine management systems. Using specialized automotive test equipment, students will learn how to analyze fuel, ignition, and emission systems. Inspection procedures and diagnostics of powertrain control module (PCM) fault code symptoms will also be covered. This course was previously ASV 258. Level I Prerequisite: Academic Reading and Writing Levels of 6; ATT 131 or ATT 133, minimum grade "C"

ATT 260 Special Vehicle Prototyping (4 Credits)

ATT

In this course, students who are interested in specialty car markets will build on experiences in prerequisite courses to evaluate their skills, while learning the techniques and applications of the design and building of custom cars. Students will learn to install and modify many aftermarket products such as hinge kits, remote door openers, custom enclosures, interior modifications and the process used to achieve show car quality sheet metal fit and finish. Teamwork, establishing project guidelines, time management, developing problem-solving skills, goal setting and the achievement of these goals will be emphasized. This course was previously CCC 210. Level I Prerequisite: Academic Reading and Writing Levels of 6; ATT 111 or ATT 112, minimum grade "B"

ATT 261 Pre-Production Chassis Design (4 Credits)

ATT

In this course, students will be introduced to metal fabrication, chassis design and assembly of custom vehicles. Students build their skills using tools such as the iron worker, hand brake and foot or Beverly shear. Topics such as choosing wheel/tire offset combinations and suspension modifications are covered. Class projects will be based on the design and fabrication of "one-of-a-kind" parts used on a custom vehicle. Working in a team environment, students will develop problem-solving skills and time management skills. Past project vehicles have gained national recognition and awards. This course was previously CCC 215. Level I Prerequisite: Academic Reading and Writing Levels of 6; ATT 111 or ATT 112, minimum grade "B"

ATT 262 Advanced Special Vehicle Prototyping (4 Credits)

ATT

In this course, students will perform advanced paint operations such as "ghosting" of graphics, "smoking" of headlights/taillights and special sanding/buffing procedures as related to the final appearance of a custom car. The removal of factory body imperfections will also be discussed. The course emphasis will be the application of a show quality paint job. This course was previously CCC 250. Level I Prerequisite: Academic Reading and Writing Levels of 6; ATT 260 minimum grade "B"; ATT 123 or ATT 124, minimum grade "B"

ATT 263 Advanced Pre-Production Chassis Design (4 Credits)

ATT

In this course, students will develop advanced skills and knowledge related to project vehicle completion. Areas of study include fastener selection, electrical system upgrades, ride tuning of suspension, brakes, steering, and final safety inspections. Working with staff and other team members, students will devise a promotional plan as well as aid in the setup, display and organization of the project vehicle's debut. This course was previously CCC 255. Level I Prerequisite: Academic Reading and Writing Levels of 6; ATT 261 minimum grade "B"; ATT 123 or ATT 124, minimum grade "B"

ATT 266 Advanced Transmissions (2 Credits)

ATT

In this course, students will learn how to inspect, diagnose, and repair late-model automotive drivetrain systems. Students will learn how to diagnose and repair manual and automatic transmissions/transaxles, transfer cases, and differentials/axles. Upon successful completion, students will be able to conduct advanced in-vehicle diagnosis on all components of the drivetrain system, and repair as necessary. The drivetrain components will focus on advancing technologies and tooling representative of manufacturer trends. This course was previously ASV 266. Level I Prerequisite: Academic Reading and Writing Levels of 6; ATT 134 minimum grade "C"

ATT 274 ATT Co-op Education II (1-3 Credits)

ATT

In this course, students will gain skills from a new experience in an approved, compensated, industry-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. As the second of two co-op courses, students will continue to develop in each of the following four areas: critical thinking, transportation-related technical knowledge, communication, and professionalism. This course was previously ASV 274. Level I Prerequisite: Academic Reading and Writing Levels of 6; ASV 174; consent required

ATT 277 Automotive Powertrain Systems (4 Credits)

ATT

In this course, students will learn about the use of a chassis roll dynamometer for testing and validation of powertrain systems. Students will learn the principles of dynamometer operation including safety systems, road cycle testing, emissions testing, and durability testing. Students also gain practical experience in the laboratory, as well as develop and execute a test sequence for horsepower, emissions testing, and fuel system testing. This course was previously ASV 277. Level I Prerequisite: Academic Reading and Writing Levels of 6; ATT 130 and ATT 131, minimum grade "C"

ATT 279 Automotive Dynamometer and Testing (4 Credits)

ATT

In this course, students will learn about data acquisition methods used in modern automotive powertrains. Students will learn the principles of strain gauge pressure sensors and Wheatstone bridge torque transducers. Students also gain practical experience in the laboratory, calibrating and validating the signals produced from a variety of automotive testing equipment. The students will develop and execute a test validation protocol on engine dynamometer stands. This course was previously ASV 279. Level I Prerequisite: Academic Reading and Writing Levels of 6; ATT 131 and ATT 132, minimum grade "C"

ATT 280 Introduction to Electric Vehicles (EV) (4 Credits)

ATT

In this course, students will learn how to service and maintain electric vehicles (EVs) according to the manufacturers' recommendations. Topics of study will include EV component locations, system identifications, and the safety standards and practices needed when servicing vehicles and components. Students will also explore the specific specialty tooling, data collection applications, and diagnostic tooling needed to perform services in a shop environment. Level I Prerequisite: Academic Reading and Writing Levels of 6; ATT 131 minimum grade "C"

ATT 281 Emerging Vehicle Technologies (2 Credits)

ATT

In this course, students will be trained in vehicle technologies that include automotive ethernet, advanced driver assist systems, advanced fuel delivery systems, connected vehicle networks, over-the-air update systems, and high-voltage charging systems for electric vehicle (EV) charging. Students will also explore diagnostic and troubleshooting methods for these emerging technologies through hands-on lab exercises and theoretical analysis. Real-world applications will be emphasized, helping students prepare to work with modern vehicle communication and propulsion systems in an evolving industry. Level I Prerequisite: Academic Reading and Writing Levels of 6; ATT 256 minimum grade "C", may enroll concurrently

ATT 282 Electric Vehicle (EV) Energy Management (4 Credits)

ATT

In this course, students will learn how to service and maintain electric vehicle (EV) batteries and on-board charging systems according to the manufacturers' recommendations. Topics of study will include EV battery subsystems and battery charging component and wiring locations. In addition, battery heating and cooling system identifications as well as safety standards and practices for EV battery service will be addressed. Students will also explore specialty battery tooling, battery management system (BMS) data, and the diagnostic tooling needed to perform battery diagnostics and removal in a shop environment. Level I Prerequisite: Academic Reading and Writing Levels of 6; ATT 256 and ATT 280, minimum grade "C"

ATT 284 Electric Vehicle (EV) Drivelines & Chassis (4 Credits)

ATT

In this course, students will learn how to service and maintain electric vehicle (EV) drivelines and HVAC systems as well as follow manufacturers' recommendations to align EV chassis. Topics of study will include, but will not be limited to, motors used in EV drive systems, EV gearbox service, as well as passenger cabin heating and cooling system identification and maintenance. Safety standards and practices for servicing EV drivelines and HVAC systems will also be addressed as well as specialty service tooling and suggested maintenance intervals. Level I Prerequisite: Academic Reading and Writing Levels of 6; ATT 282 minimum grade "C"

ATT 286 Electric Vehicle (EV) Dynamometer Testing (2 Credits)

ATT

In this course, students will learn how to use automotive and motorcycle chassis dynamometers to collect vehicle data from electric vehicles (EVs). Topics of study will include, but will not be limited to, diagnosing EV drivability issues, developing custom tests to capture miles per gallon of gasoline-equivalent (MPGe) data, and identifying safety standards and practices for chassis dynamometers with EVs. Students will also use dynamometer tests to assess EV battery consumption and degradation values associated with varied weather, temperature, and driving style. Level I Prerequisite: Academic Reading and Writing Levels of 6; ATT 282 minimum grade "C"