Automotive Collision Technology | American River College

American River College offers a wide variety of programs to appeal to a diverse group of students. Our Automotive Technology, Automotive Collision Technology and Diesel/Clean Diesel Technology programs are a combination of classroom and hands-on shop experiences that prepare students for careers in all phases of the transportation industry. Students are trained in the use of workshop manuals in traditional and computerized formats, hand-held meters and scanners and special shop tools including power and hand tools.

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Associate Degree

A.S. in Automotive Collision Technology.

This degree provides an extended combination of classroom and hands-on shop experience to prepare for careers in all phases of automotive collision technology. Topics include component repairs, structural and non-structural repairs and refinishing. It also covers various automotive systems, such as heating and air-conditioning, suspension steering, and electrical.

Degree Requirements

COURSE CODE	COURSE TITLE	UNITS
ACT 100	Automotive Collision Basics	4
ACT 110	Component Repairs	4
ACT 120	Non-Structural Repair	4
ACT 130	Structural Repair	4
ACT 131	Automotive Collision Welding	4
ACT 140	Automotive Refinishing	4
ACT 161	Automotive Collision Software Systems, Estimating I	4
AT 100	Technical Basics for the Automotive Professional	3
AT 105	Mathematics for Automotive Technology	3
AT 180	Automotive Data Acquisition	3
AT 310	Heating and Air-Conditioning Systems	3
AT 311	Suspension and Steering Systems	3
AT 330	Automotive Electrical Systems	6
A minimum of 4 units from the following:		4
ACT 298	Work Experience in Collision Technology (1 - 4)	
Total Units:		53

The Automotive Collision Technology. Associate in Science (A.S.) degree may be obtained by completion of the required program, plus general education requirements, plus sufficient electives to meet a 60-unit total. See ARC graduation requirements.

Student Learning Outcomes

Upon completion of this program, the student will be able to:

- identify and estimate automotive collision damage.
- develop a repair plan.
- repair automotive collision mechanical damage.
- repair frame/unibody automotive collision structural damage.
- repair automotive collision body damage.
- refinish automotive collision damage.

Career Information

This program provides training and hands-on experience in high-demand skills that lead to promising careers with high wages. Students who have successfully completed this program are working as non-structural, structural, refinish and estimating technicians. The U.S. Labor Department reports that job opportunities for auto collision specialists are excellent because of the large number of older workers who are expected to retire in the next 5 to 10 years. In addition, it points out that experienced technicians are rarely laid off and that employers prefer to hire graduates of a formal training program for which provides a foundation in the latest collision technology, including the techniques and equipment used on the job.

Certificates of Achievement

Automotive Claims Estimator Certificate

This program provides the technical and practical skills necessary to properly diagnose collision-damaged vehicles and to document the cost and time necessary to repair collision-damaged vehicles. The use of state-of-the-art, computer-generated estimating programs and video imaging are used to prepare itemized estimates on collision-damaged vehicles. The procedures to prepare itemized estimates detailing the required procedures and parts necessary to correctly repair the vehicle are also covered.

Certificate Requirements

COURSE CODE	COURSE TITLE	UNITS
ACT 110	Component Repairs	4
ACT 120	Non-Structural Repair	4
ACT 161	Automotive Collision Software Systems, Estimating I	4
BUS 212	Marketing for Small Businesses	1
BUS 218	Management Skills for the Small Business	1
BUS 224	Customer Service	1
BUSTEC 300.1	Keyboarding/Applications: Beginning	1[1]
Total Units:		16

[1]Keyboard proficiency test. This program can be completed in 15 units if student passes keyboarding test.

Student Learning Outcomes

Upon completion of this program, the student will be able to:

- complete an accurate repair estimate

- apply technical skills necessary to remove, replace and align damaged cosmetic and mechanical related components
- recognize and identify direct, indirect and secondary damage on collision-damaged vehicles
- create a marketing plan for a small business utilizing appropriate data
- analyze the four functions of management: planning, organizing, directing, and evaluating
- demonstrate methods for building effective customer service teams
- create and edit documents using appropriate word processing functions

Gainful Employment

The US Department of Education requires colleges to disclose a variety of information for any program that is eligible for financial aid that "prepares students for gainful employment in a recognized occupation." The following link provides Gainful Employment Disclosure information for this certificate program:

Gainful Employment Information for Automotive Claims Estimator Certificate of Achievement (https://web.losrios.edu/gainful-emp-info/arc/30325/30325.htm)

Career Information

This program provides training and hands-on experience in high-demand skills that lead to promising careers with high wages. The U.S. Labor Department reports that job opportunities for auto collision specialists are excellent because of the large number of older workers who are expected to retire in the next 5 to 10 years. In addition, it points out that experienced technicians are rarely laid off and that employers prefer to hire graduates of a formal training program because it provides a foundation in the latest collision technology, including the techniques and equipment used on the job.

Automotive Collision Technology. Certificate

This program provides a combination of classroom and hands-on shop experience to prepare for careers in all phases of automotive collision technology repair. Topics include component repairs, structural and non-structural repairs and refinish. It also covers various automotive systems, such as heating and air-conditioning, suspension steering, and electrical.

Certificate Requirements

COURSE CODE	COURSE TITLE	UNITS
ACT 100	Automotive Collision Basics	4
ACT 110	Component Repairs	4
ACT 120	Non-Structural Repair	4
ACT 130	Structural Repair	4
ACT 131	Automotive Collision Welding	4
ACT 140	Automotive Refinishing	4
ACT 161	Automotive Collision Software Systems, Estimating I	4
AT 100	Technical Basics for the Automotive Professional	3
AT 105	Mathematics for Automotive Technology	3
AT 180	Automotive Data Acquisition	3
AT 310	Heating and Air-Conditioning Systems	3
AT 311	Suspension and Steering Systems	3
AT 330	Automotive Electrical Systems	6
A minimum of 4 units from the following:		4

COURSE CODE	COURSE TITLE	UNITS
ACT 298	Work Experience in Collision Technology (1 - 4)	
Total Units:		53

Student Learning Outcomes

Upon completion of this program, the student will be able to:

- identify and estimate automotive collision damage
- repair automotive collision mechanical damage
- repair frame/unibody automotive collision structural damage
- repair automotive collision body damage
- refinish automotive collision damage

Gainful Employment

The US Department of Education requires colleges to disclose a variety of information for any program that is eligible for financial aid that "prepares students for gainful employment in a recognized occupation." The following link provides Gainful Employment Disclosure information for this certificate program:

Gainful Employment Information for Automotive Collision Technology. Certificate of Achievement (https://web.losrios.edu/gainful-emp-info/arc/38080/38080.htm)

Career Information

This program provides training and hands-on experience in high-demand skills that lead to promising careers with high wages. Students who have successfully completed this program are working as apprentice shop technicians. The U.S. Labor Department reports that job opportunities for auto collision specialists are excellent because of the large number of older workers who are expected to retire in the next 5 to 10 years. In addition, it points out that experienced technicians are rarely laid off and that employers prefer to hire graduates of a formal training program because it provides a foundation in the latest collision technology, including the techniques and equipment used on the job.

Certificates

Automotive Collision Technology-Non-Structural Certificate

This certificate provides a combination of classroom and hands-on experience to prepare for careers in non-structural automotive collision technology. Topics include automotive collision basic, component and non-structural repairs. This certificate is intended for students who have completed the Automotive Collision Technology Certificate and need to obtain a higher skill level to obtain higher I-CAR pro levels.

Certificate Requirements

COURSE CODE	COURSE TITLE	UNITS
ACT 100	Automotive Collision Basics	4
ACT 110	Component Repairs	4
ACT 120	Non-Structural Repair	4
Total Units:		12

Student Learning Outcomes

Upon completion of this program, the student will be able to:

- identify collision damage

- repair vehicle sheet steel
- determine repair or replace based on I-CAR/ASE criteria
- repair hybrid vehicles to meet legal safely standards

Career Information

This program provides training and hands-on experience in high-demand skills that lead to promising career with high wages. Students who have successfully completed this program are working as body repair technicians. The U.S. Labor Department reports that job opportunity for auto collision specialists are excellent because of large number of older workers who are expected to retire in the next 4 to 10 years. In addition, it points out that experienced technicians are rarely laid off and employers prefer to hire graduates of a formal training program because it provides a foundation in the latest collision technology, including the techniques and equipment used on the job.

Automotive Collision Technology-Refinish Certificate

This program provides a combination of classroom and hands-on shop experience to prepare for a career in automotive collision technology refinishing. Topics include component repair, non-structural repairs and, refinishing. This certificate is intended for students who are interested in exploring the field of Automotive Collision Refinish.

Certificate Requirements

COURSE CODE	COURSE TITLE	UNITS
ACT 110	Component Repairs	4
ACT 120	Non-Structural Repair	4
ACT 140	Automotive Refinishing	4
Total Units:		12

Student Learning Outcomes

Upon completion of this program, the student will be able to:

- identify color matching and solutions
- apply color blending procedures including application
- apply paint material with proficiency
- polish repaired surface to factory finish
- prepare surface in all application phases
- remove and install adjacent parts for quality refinish preparation

Career Information

This program provides training and hands-on experience in high-demand skills that lead to promising careers with high wages. Students who have successfully completed this program are qualified candidates for refinish apprenticeships. The U.S. Labor Department reports that job opportunities for auto collision specialists are excellent because of the large number of older workers who are expected to retire in the next 5 to 10 years. In addition, it points out that experienced technicians are rarely laid off and that employers prefer to hire graduates or a formal training program because it provides a foundation in the latest collision technology, including the techniques and equipment used on the job.

Automotive Collision Technology-Structural Certificate

This program provides a combination of classroom and hands-on shop experience to prepare for a career in automotive collision structural repairs. This certificate is intended for students who have completed the Automotive Collision Technology Certificate and need to obtain a higher skill level in the field.

Certificate Requirements

COURSE CODE	COURSE TITLE	UNITS
ACT 110	Component Repairs	4
ACT 130	Structural Repair	4
ACT 131	Automotive Collision Welding	4
Total Units:		12

Student Learning Outcomes

Upon completion of this program, the student will be able to:

- identify structural damage
- mount and measure vehicles
- pull and square damaged structural areas
- perform collision related welding of sheet steel
- remove and install components

Career Information

This program provides training and hands-on experience in high-demand skills that lead to promising careers with high wages. Students who have successfully completed this program are working as frame/uni-body technicians. The U.S. Labor Department reports that job opportunity for auto collision specialists are excellent because of the large number of older workers who are expected to retire in the next 5 to 10 years. In addition, it points out that experienced technicians are rarely laid off and that employers prefer to hire graduates of a formal training program because it provides a foundation in latest collision technology, including the techniques and equipment used on the job.

Automotive Collision Technology (ACT)

ACT 100 Automotive Collision Basics

Units:	4
Hours:	54 hours LEC; 54 hours LAB
Prerequisite:	None.

This course covers the basics of automotive collision repair of traditional, electric, and electric hybrid vehicles. Topics include use and disposal of hazardous materials; lighting, starting, and charging systems; and appropriate use and maintenance of tools and equipment.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- analyze fundamental damage on a vehicle.
- use, handle and dispose of hazardous chemicals.
- recognize tools and use them safely.

ACT 110 Component Repairs

Units:	4
Hours:	54 hours LEC; 54 hours LAB
Prerequisite:	ACT 100 with a grade of "C" or better

This course provides the technical principals and theories to perform limited and supervised repairs to collision-damaged vehicles. It covers how to safely remove, inspect, replace, and align bolt-on body components per vehicle manufacturers' specifications. It covers protection of mechanical and electrical systems, removal of damaged parts, removal and re-installation of movable glass, diagnosis of wind noise and water leaks, and techniques applicable to damaged vehicles. Students enrolled in the Collision Technology program at American River College (ARC) may be eligible to apply for Inter-Industry Conference on Automotive Collision Repairs (I-CAR) points and I-CAR certifications. This ARC-ACT/I-CAR alliance course also prepares students for Automotive Service Excellence (ASE) testing and National Automotive Technicians Education Foundation (NATEF) training standards.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- apply technical skills necessary to remove, replace, and align damaged mechanical and cosmetic sheet metal components per manufacturers' specifications.
- identify direct, indirect, and secondary damage on collision-damaged vehicles.
- demonstrate the correct and safe use, operation, and application of power and hand tools used in auto collision repair.
- examine, adjust, and replace movable door glass and associated electrical systems.
- assess and eliminate vehicle wind noise and water leaks.

ACT 120 Non-Structural Repair

Units:	4
Hours:	54 hours LEC; 54 hours LAB
Prerequisite:	ACT 100 with a grade of "C" or better

This course provides the technical principles and theories to perform limited and supervised repairs to collision-damaged vehicles. It covers the fundamentals and theory of automotive collision repair procedures including composite repairs and replacements. Foam application techniques pertaining to noise reduction and structural strength are implemented. Additionally, metal straightening theory and techniques for steel and aluminum repairs, and the decision to make repairs vs. replacement are included. Students enrolled in the Collision Technology program at American River College (ARC) may be eligible to apply for Inter-Industry Conference on Automotive Collision Repair (I-CAR) points and I-CAR industry certifications. This ARC-ACT/I-CAR alliance course also prepares students for Automotive Service Excellence (ASE) testing, and National Automotive Technicians Educational Foundation (NATEF) training standards.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- repair and align damaged sheet metal and component parts on late model vehicles.
- evaluate the types of damage on collision damaged vehicles.
- determine procedures, techniques, and tools used to repair collision damaged vehicles.
- operate power and hand tools used in vehicle collision repair.
- evaluate repair vs. replacement decisions.

- implement composite repairs and replacement techniques.
- utilize structural and Noise Vibration Harshness (NVH) foams in the repair process.

ACT 130 Structural Repair

Units:	4
Hours:	54 hours LEC; 54 hours LAB
Prerequisite:	ACT 100 and 131 with grades of "C" or better

This course covers principles and theories of automotive collision repair, including component alignment, component replacement, structural panel repair or replacement, corrosion protection, and chassis/frame alignment. Sectioning and full-panel replacement techniques and procedures are covered, including welding and self-piercing rivet adhesive bonding. Required corrosion protection techniques are applied. Students enrolled in the Collision Technology program at American River College (ARC) may be eligible to apply for Inter-Industry Conference on Automotive Collision Repair (I-CAR) points and I-CAR industry certifications. This ARC-ACT/I-CAR alliance course also prepares students for Automotive Service Excellence (ASE) testing, and National Automotive Technicians Education Foundation (NATEF) training standards.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- identify and analyze structural damage to collision damaged vehicles.
- inspect and measure damage using industry standard procedures and equipment.
- restore collision damaged aluminum and steel to pre-accident condition.
- evaluate composite paneled vehicles and body panels for repair versus replacement decisions.
- remove, repair, replace, and install panels on Unibody type systems.
- apply theory, techniques, and procedures for restoration of structural panels.
- determine type and application technique of corrosion protection materials.

ACT 131 Automotive Collision Welding

Units:	4
Hours:	54 hours LEC; 54 hours LAB
Prerequisite:	None.

This course covers the various processes of welding in automotive collision repairs using metal inert gas (MIG) and tungsten inert gas (TIG). Topics include preparation, welding, and finishing.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- perform Sheet and .120 Steel welding with metal inert gas (MIG) and tungsten inert gas (TIG) on Standard, High Strength Steel (HSS), Advanced High Strength Steel (AHSS), Ultra High Strength steel (UHSS) and Boron Steel
- perform Sheet and .120 Aluminum welding with MIG and TIG
- perform Sheet and .120 Stainless Steel welding with MIG and TIG
- repair collision damage

ACT 140 Automotive Refinishing

Units:	4
Hours:	54 hours LEC; 54 hours LAB
Prerequisite:	ACT 100 and 120 with grades of "C" or better

This course covers the principles and theories of paint finish application, tinting, color evaluation, and color adjustments. Topics include paint application techniques, new and emerging paint technologies, color identification, and interpreting vehicle color codes. This course also addresses multiple compliances with regulations as determined by the Occupational Safety and Health Administration (OSHA), the Environmental Protection Agency (EPA), the Clean Air Act, and the Sacramento Municipal Air Quality Air Management District (SMAQMD) pertaining to Volatile Organic Compounds (VOC's). Students enrolled in the Automotive Collision Technology (ACT) program at American River College (ARC) may be eligible to apply for Inter-Industry Conference on Automotive Collision Repair (I-CAR) points and I-CAR industry certifications. This ARC-ACT/I-CAR alliance course also prepares students for Automotive Service Excellence (ASE) testing and National Automotive Technicians Education Foundation (NATEF) training standards.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- analyze the principles and theories of tinting technology.
- evaluate color and color adjustment for industry's current refinishing products.
- interpret and comply with regulations for OSHA, EPA, the Clean Air Act, and SMAQMD VOC.
- implement refinishing application techniques.

ACT 150 Advanced Collision Frame & Unibody

Units:	4
Hours:	54 hours LEC; 54 hours LAB
Prerequisite:	ACT 110, 120, 130, and 140 with grades of "C" or better

This course covers the principles and theories of advanced chassis design, development, and construction. Extensive bracket and frame fabrication and welding are emphasized.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- design automotive frames or modifications
- cut and form 18gage to 3/8" steel and aluminum
- weld similar and dissimilar metal thicknesses to specification
- mount, measure, and assemble frame components

ACT 152 Advanced Collision Suspensions

Units:	4

Hours:	54 hours LEC; 54 hours LAB
Prerequisite:	ACT 110, 120, 130, and 140 with grades of "C" or better

This course covers the principles and theories of advanced suspension design, development, and construction. Topics include big brakes and air suspensions.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- design and plan automotive suspension assemblies
- modify suspensions including big brakes
- design and plan steering assemblies
- install suspension and steering assemblies

ACT 154 Advanced Collision Drivetrain

Units:	4
Hours:	54 hours LEC; 54 hours LAB
Prerequisite:	ACT 110, 120, 130, and 140 with grades of "C" or better

This course covers the principles and theories of advanced engines and transmissions. Topics include engine performance tuning and transmission selection.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- identify engine types
- modify and install engine and transmission components
- select, modify, and install transmissions
- interpret fuel injection fuel maps and adjust fuel injection systems

ACT 156 Advanced Collision Refinish

Units:	4
Hours:	54 hours LEC; 54 hours LAB
Prerequisite:	ACT 110, 120, 130, and 140 with grades of "C" or better

This course covers the principles and theories of advanced custom show-quality automotive finishes. Topics include primers, color coats, special effects, clear coats, and polishing.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- plan and refinish a car from start to finish
- prepare surface for a custom hot rod finish to a high standard of excellence
- demonstrate proper usage of spray guns

- polish the refinished surface to a mirror-like appearance

ACT 161 Automotive Collision Software Systems, Estimating I

Units:	4
Hours:	54 hours LEC; 54 hours LAB
Prerequisite:	None.

This course provides the technical and practical skills necessary to properly diagnose collision-damaged vehicles and to document the cost and time necessary to repair collision-damaged vehicles. The use of state-of-the-art computer generated estimating programs and video imaging are used to prepare itemized estimates on collision-damaged vehicles. The procedures to prepare itemized estimates detailing the required procedures and parts necessary to correctly repair the vehicle are also covered.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- complete an accurate handwritten repair estimate.
- identify a vehicle's codes and parts.
- use the procedure pages (P-pages) to determine appropriate steps for a given job estimate.
- demonstrate proficiency in establishing a step-by-step sequence for estimating and using this same technique for all estimates.
- explain the function of the California Bureau of Automotive Repair.
- use the Mitchell Ultra-Mate Estimating System to accurately produce computer assisted estimates.
- diagnose and analyze collision-damaged vehicles.

ACT 298 Work Experience in Collision Technology

Same As:	DCDT 298
Units:	1 - 4
Hours:	60 - 300 hours LAB
Prerequisite:	None.
Enrollment Limitation:	Students must be in a paid or unpaid internship, volunteer position, or job related to the automotive collision field with a cooperating site supervisor. Students are advised to consult with the Automotive Collision Department faculty to review specific certificate and degree work experience requirements.
Advisory:	Eligible for ENGRD 310 or ENGRD 312 AND ENGWR 300; OR ESLR 340 AND ESLW 340.
General Education:	AA/AS Area III(b)

This course provides students with opportunities to develop marketable skills in preparation for employment or advancement within the automotive collision field. It is designed for students interested in work experience and/or internships in associate degree level or certificate occupational programs. Course content includes understanding the application of education to the workforce, completion of Title 5 required forms which document the student's progress and hours spent at the work site, and developing workplace skills and competencies.

During the semester, the student is required to complete 75 hours of related paid work experience, or 60 hours of related unpaid work experience for one unit. An additional 75 or 60 hours of related work experience is required for each additional unit. All students are required to attend the first class meeting, a mid-semester meeting, and a final meeting. Additionally, students who have not already successfully completed a Work Experience course will be required to attend weekly orientations while returning participants may meet individually with the instructor as needed. Students may take up to 16 units total across

all Work Experience course offerings. This course may be taken up to four times when there are new or expanded learning objectives. Only one Work Experience course may be taken per semester.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- demonstrate mastery of specific job skills in the automotive collision field related to an associate degree or certificate occupational program level career as written in the minimum three (3) learning objectives created by the student and his/her employer or work site supervisor at the start of the course.
- make effective decisions, use workforce information, and manage his/her personal career plans.
- behave professionally, ethically, and legally at work, consistent with applicable laws, regulations, and organizational norms.
- behave responsibly at work, exhibiting initiative and self-management in situations where it is needed.
- apply effective leadership styles at work, with consideration to group dynamics, team and individual decision making, and workforce diversity.
- communicate in oral, written, and other formats, as needed, in a variety of contexts at work.
- locate, organize, evaluate, and reference information at work.
- demonstrate originality and inventiveness at work by combining ideas or information in new ways, making connections between seemingly unrelated ideas, and reshaping goals in ways that reveal new possibilities using critical and creative thinking skills such as logical reasoning, analytical thinking, and problem-solving.

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