

ACR/P 2B – Automotive Refinishing Materials & Equipment

Automotive Collision Repair/Painting – Division of Industry & Technology

<http://www.elcamino.edu/academics/indtech/autocollision/>

Facebook: El Camino College Auto Collision Dept.

Professor: Pati Fairchild

Email: pfairchild@elcamino.edu

Phone: 310-660-3593 x5996

Office: SHOP 404

Office Hours: Mon-Thurs 6:15-7:00 AM

COURSE DESCRIPTION

This course provides instruction on the principles of automotive refinishing involving safety practices and equipment, air supply equipment, refinishing spray booth, spray equipment, undercoat materials, solvents, topcoat color systems, and paint application procedures.

COURSE OBJECTIVES

1. Complete a comprehensive automotive collision repair/painting safety test with 100% accuracy
2. Select and utilize the correct safety equipment to prevent dermal or inhalation exposure to automotive refinishing solvents or paints
3. Start up, operate and shut down automotive refinishing spray booths
4. Differentiate between a cross-draft and down-draft spray booth
5. Set up, operate and service a paint refinish air supply system
6. Set up, operate and service automotive refinishing spray gun equipment
7. Select, mix and apply automotive solvents, undercoat materials and topcoat paint systems

STUDENT LEARNING OUTCOMES

Upon completion of this class, students will be able to analyze a given repair job and choose the correct chemicals and additives needed for the job based on weather conditions, job scope, job budget, and job deadline. Students will also be able to be able to set up, operate, and shut down a spray booth according to outside temperature and humidity, and the vehicle job and chemicals being sprayed.

RECOMMENDED TEXTBOOKS

Thomas, Alfred. Collision Repair and Refinishing: A Foundation Course for Technicians. 2nd Ed. Delmar Cengage Learning, 2013.

REQUIRED EQUIPMENT

Safety glasses, dust mask	2-3 Quarts clear w/hardener	Digital camera
Respirator	1-2 Quarts basecoat w/reducer	3-Ring binder
Rubber gloves	Sprayout cards	Pen or pencil
Spray gun	Precleaner, lint-free towels	¾" Masking tape

ASSIGNMENTS, QUIZZES & TESTS

Safety Test	5 points	Paint: Pearl/Kandy Panel	10 points
VOC/6H Certification Quiz	10 points	Paint: Undercoat	5 points
Gun Adjustment Quiz	10 points	Paint: Custom 3D Object	25 points
Bent Panel Fabrication/Prep	5 points	ASE B2 Practice/Test	20 points
Paint: Metallic Panels	10 points	Chapters (5 points each)	25 points
Paint: Bumper	20 points	Notebook/Sprayouts/VOC	30 points
Paint: Masked Jamb	10 points	Clean Up	30 points
Midterm Exam	35 points	Participation/Attendance	50 points
Paint: Metallic Blend	10 points	Final Exam	35 points
Paint: Bumper Spot Repair	15 points		
			<u>Total: 360 points</u>

GRADING SCALE

A (90%)	324 – 360
B (80%)	288 – 323
C (70%)	252 – 287
D (60%)	216 – 251
F (>60%)	0 – 215

EXTRA CREDIT

Opportunities for extra credit will be available throughout the semester. Examples of extra credit assignments include short reports on automotive-related videos or news articles, attendance of automotive car shows or events, and volunteering for lab improvement, ACR/P outreach or fundraising activities.

COURSE OUTLINE

Wk	Day	Date	Due	Lecture Topic
1	M	8/26	SAFETY TEST	Enrollment, lab rules, syllabus review
	T	8/27	Quiz – 6H Cert, VOCs	Spray guns, safety equipment, 6H Certification
	Th	8/29	Bent panel fabrication	Gun cleaning and cleaners, VOC tracking (review)
2	T	9/3	Quiz - Gun Adjustment	Spray booth types, filtration and use; fresh air systems
	Th	9/5		TBD – Class field trip to Coast Airbrush
3	T	9/10	Chapter 22	Looking at color, colorblindness, metamerism
	Th	9/12		Topcoat paint systems, color codes and variants
4	T	9/17	Toner Pour sprayout	Color selection, formula retrieval, toner pour, sprayout cards
	Th	9/19	Chapter 31	Pre-paint prep, masking and cleaning (review)
5	T	9/24	Chapter 21	Temperature, chemicals & techniques for color match
	Th	9/26	Metallic Match sprayouts	Painting complex 3D objects
6	T	10/1	Paint: Metallic Panels	Masking and spraying 2-tones
	Th	10/3		TBD – Class field trip to J&C's Custom Paint
7	T	10/8	Paint: Bumper	Blending colors – prep and planning
	Th	10/10	Chapter 30	Blending colors – methods and chemicals
8	T	10/15	Paint: Masked Jamb, Chapter 29	Adjusting color – the 'blendable match'
	Th	10/17	MIDTERM EXAM	
9	T	10/22	Blendable Match sprayout	Single stage paints, clearcoat comparisons
	Th	10/24	Paint: Metallic Blend	Tri-coat paints
10	T	10/29	Pearl/Kandy Letdown	Blending pearls and kandies
	Th	10/31	Paint: Bumper Spot Repair	Flat paints & flat spot repairs
11	T	11/5	-----	TBD – SEMA Show
	Th	11/7	-----	TBD – SEMA Show
12	T	11/12		Flakes and other custom materials
	Th	11/14	Bent Panel - Pearl/Kandy	Automotive aerosols
13	T	11/19		Undercoat and spray-in bedliners
	Th	11/21	ASE B2 Practice Test	Gravel guard – spray-on and applied vinyl
14	T	11/26	Paint: Undercoat	Matching orange peel via clearcoat application and detailing
	Th	11/28	-----	Thanksgiving Break – No Class
15	T	12/3	Paint: Texture Match	
	Th	12/5	Custom Paint: 3D Object	Powdercoating
16	T	12/10	NOTEBOOK, JOB HRS	
	W	12/11	CLEAN UP	All students MUST be present for Clean Up
	Th	12/12	FINAL EXAM	

GRADUATE TOOLBOX

A student wishing to become an automotive body repair technician or painter should begin purchasing the following tools during their college semesters to prepare for employment in the industry. Industry professionals are expected to have their own tools and locking rolling toolbox.

Basic Hand Tools:

Wrenches (open end, box end, combination)
Adjustable Wrenches
Socket Wrenches (1/4" drive, 3/8" drive, 1/2" drive)
Sockets (Metric and Standard)
TORX Bits
Extensions
Phillips Screwdrivers
Flathead/Slotted Screwdrivers
Pliers
Diagonal Cut Pliers
Locking Pliers (Vise Grips)

Welding:

Oxy/Acetylene Torch Body
Oxy/Acetylene 00 Tip
Friction Lighter (Striker)
MIG Welding Mask
MIG Welder and Cart

Metalworking Tools:

Pick Hammer
Cross Peen Hammer
Ball Peen Hammer
Dinging Hammer
Square Face Hammer
Fender Bumping Hammer
Shrinking Hammer
Sledge Hammer
Toe Dolly
Heel Dolly
Comma Dolly
Teardrop Dolly
Railroad/Universal Dolly
Shrinking Dolly
Spoon Dolly ("Dolly on a Stick")
Body Spoons
Springing Spoon
Slapper
Body File
Body Pick/Pry Bar

Tools for Applying and Shaping Filler:

Spreader
Mixing Board
5" Sanding Block
8" Sanding Block
Round Sanding Block
Soft Block/Sanding Pad
Short Board Sander
Longboard Sander
Cheese Grater (Rasp)
Guide Coat (dry powder or aerosol)
Dual Cartridge Adhesive Gun

Pneumatic Tools and Dent Pullers:

Face Shield
3" Angle Grinder with Roloc Discs
5" Angle Grinder
9" Angle Grinder
6" DA (Dual Action) Sander
8" DA Sander ("Bondo Buster")
Air File
Die Grinder with Cutoff Wheel
Drill with Chuck Key
Spot Weld Drill
Rak Jak
Stud Welder & Slide Hammer
Maxi Welder
Morgan Nokker (big slide hammer)
Porto-Power

Paint Guns and Equipment:

Respirator
Primer Gun (1.8 tip)
Basecoat Gun (1.3-1.4 tip)
Clearcoat Gun (1.4-1.5 tip)
Gun Cleaning Kit
Paint Drying Gun/Air Blower
Airbrush/Detail Gun
Air Compressor
Color Matching Light
Buffer and Pads

Tool Storage:

Rolling Locking Toolbox

CLASS POLICIES

ATTENDANCE & PARTICIPATION

This class consists of two parts: a lecture session and a lab session. Participation in both is mandatory and attendance will be taken. Two tardies will equal one absence.

LECTURE ATTENDANCE

No more than 4 absences are allowed. You will forfeit points and may be DROPPED from class if you exceed 4 lecture absences. You will be considered late if you are not present when roll is called.

LAB ATTENDANCE

No more than 8 absences are allowed. You will forfeit points and may be DROPPED from class if you exceed 8 lab absences. You will be considered late if you are not in the lab by 7:30 AM. At 7:30, the gate to the lab complex will be locked and you will not be allowed to bring your project car into the lab. You may, however, park your car outside and attend class without your car.

PARTICIPATION

There is more to participation than just showing up! There are approximately 60 days of lab in each semester, totaling about 210 hours plus clean-up time. **Achieving a goal of 180 active, productive hours per semester is expected.** Students will be asked to track their lab time and progress just like at a real shop. Lab time can be spent watching instructor demos, working or assisting on personal cars or 'customer' cars, or working on class assignments. Non-participating students may be dropped.

STUDENT PROJECT VEHICLES

Students will be charged a \$20 lab fee for each vehicle brought into class. Parts may be brought in without charge. All vehicles must be approved and have work orders filled out before student can begin work. Students may have no more than one vehicle or one group of parts in the lab at a time.

WORK ORDERS

Work orders MUST be on the dash of your car whenever it is in the lab complex. Vehicles without work orders must be removed and may be ticketed by campus police.

OVERNIGHT PARKING & CAR COVERS

There is NO overnight storage of vehicles without instructor permission. Vehicles granted overnight parking may use car covers when parked outside. Covers are NOT allowed on cars parked inside.

COMPENSATION

Students are NOT allowed to receive financial compensation for work performed during class. For your safety, DO NOT agree to work on someone else's car for money. Customer jobs are to be routed through the instructor and liability forms must be signed by vehicle owner. Donations of tools or materials from thankful vehicle owners will be routed to the correct student(s).

PROGRESS

Any vehicle not worked on for 3 class days (whether consecutive or not) will lose lab entry privileges and must apply for a new work order and pay new lab fees.

'CUSTOMER' PROJECT VEHICLES

At times, vehicles belonging to non-students will be brought into the lab for repairs. Each student will be asked to contribute 15 job hours of labor to these outside vehicles throughout the semester as part of the 'Participation' assignment.

DEADLINES

Exams, assignments, and homework all have pre-scheduled due dates. On occasion, it may be necessary to alter these dates because of class field trips, guest speakers or our progress during the semester. You will always be given advance notice of such changes.

LAB SAFETY

All students are required to have emergency contact information on file each semester and to fill out the class safety, liability and responsibility forms. You will not be allowed to work in the lab until your safety paperwork is in order. Students are expected to consider their own safety and the safety of others when working in the lab.

FIRST AID

There is a first aid kit in the lab, however any injury requiring more than a Band-aid should be taken to the Student Health Center. Report all injuries to the instructor, no matter how slight.

WORKING SAFELY

SAFETY GLASSES ARE REQUIRED IN THE LAB AT ALL TIMES. If you do not have safety glasses (or a respirator when painting) you will not be allowed to work in the lab.

ATTIRE

No tank tops, shorts, or open toed shoes/sandals are allowed in the lab. Cotton and cotton blend fabrics are preferred. Steel toed boots are not required, but work boots or sturdy shoes are encouraged. Hanging jewelry should be removed and long hair confined when working with power or pneumatic tools.

RADIOS

Please do not play car stereos or other radios during lab. You may wear headphones, but you MUST keep the volume low enough to be able to hear your name called or hear a call of "Fire!" or "Look out!"

SMOKING

Smoking is not allowed in the lab. If you smoke, please do so outside the complex and clean up after yourself.

FOOD & DRINK

Eating or drinking out of open containers is discouraged in the lab due to unhealthy dust or particles that may contaminate your food. Sealed bottles are preferred for beverages. If you bring food or drink into the classroom, please dispose of the waste properly. No food or drink is allowed in the spray booths.

LAB CHEMICALS

Students must be aware of various toxic and/or flammable chemicals, materials and gases in the lab. Oil spills must be wiped up or treated with absorbent available from the tool room. Paint or liquid chemical spills must be cleaned up and soaked towels placed into a sealed metal container to prevent fire. Notify the instructor of any open gas tanks and plug the opening with masking tape or a damp rag to prevent sparks from entering.

VOC FORMS

For EACH CHEMICAL USED in the spray booth, you MUST fill out a VOC form informing the school what chemical you used, how much you used, and the VOC rating of the chemical.

GUN WASHERS & TOXIC WASTE BARREL

After spraying, pour unwanted paint into the waste barrel in the thinner room and CLOSE THE LID. Please use the gun washer(s) to clean spray equipment after use. BE SURE TO USE THE PROPER WASHER FOR THE MATERIAL SPRAYED. Don't contaminate all the cleaner in the washer by putting in the wrong paint!

CLEANING UP

This department does not have a custodian. All students are required to clean up the floor area and work benches they have used, and to clean their assigned area. When the clean-up bell rings at the end of lab, students are to stop working, return all tools to the tool room and equipment to its place, sweep and/or hose down their work area, and clean the area assigned to their team. All indoor floors must be swept and hosed down on Thursdays.

TOOL RESPONSIBILITY

You are responsible for the condition of the tools you check out from the tool room. Loss or damage due to intentional misuse of a tool will require you to replace the tool. If a tool is in need of adjustment or repair, report it to the toolroom attendant immediately.

LOCKERS

Lockers are available for student use. You will need to bring your own lock and keep track of your own key or combination. Lockers must be emptied at the end of the semester or locks will be cut and contents forfeited. Please do not store flammable materials in the lockers.

THEFT & VANDALISM

Theft or vandalism of school or student property is absolutely forbidden and will be reported to campus police. If the occurrence happens during class, the classroom door and gate will be locked and no student will be allowed to leave until the issue is settled by campus police.

CAMPUS POLICIES & RESOURCES

ACADEMIC INTEGRITY - See El Camino College Catalog, Standards of Student Conduct

El Camino College takes cheating and plagiarism very seriously. When you cheat OR HELP SOMEONE ELSE CHEAT you risk failing the test, getting dropped from your class, or even expulsion from school without a refund.

CAMPUS ATTENDANCE and WITHDRAWAL POLICY - <http://www.elcamino.edu/admissions/attendance.asp>

In the event you choose to withdraw from the course, the burden of following through with the withdrawal process is your responsibility. You may or may not be dropped for excessive absences. Failure to attend DOES NOT guarantee being dropped. Please understand that if you do not officially withdraw before the end of the 12th week of the semester, you MUST be assigned a letter grade (A-F) based upon what you have earned. Please refer to the College Catalog for more detail. If you believe you must withdraw for any reason, please consult with the instructor first. Perhaps a way to help you complete the course successfully can be found.

INCOMPLETES IN THE COURSE - <http://www.elcamino.edu/admissions/grading.asp>

An Incomplete grade will not be given unless the student has a legitimate personal crisis that prevents finishing the course on time. Students receiving an incomplete must be doing passing work up to that point. If such an occurrence happens, it is the student's responsibility to contact the instructor immediately to explain the situation and make plans.

JURY DUTY & RELIGIOUS OBSERVANCES

Please notify the instructor in advance of obligations and observances that interfere with class attendance.

STUDENTS WITH DISABILITIES - <http://www.elcamino.edu/academics/src/>

El Camino College has a tradition of providing access to education for students with disabilities. For further information, see the Special Resource Center. Students with disabilities should inform the instructor especially if there are medical problems or learning disabilities. Accommodations may be provided as recommended by the Special Resource Center.

COUNSELING & CAREER PLANNING – <http://www.elcamino.edu/student-services/co/>

There are many, many resources on campus for students in need of academic or personal help, advice, or financial assistance. Students can also get help with career planning, scholarship application, internships and more.

For questions regarding ACR/P classes or graduation, contact Valencia Rayford at 310-660-3593 ext. 6407 or vrayford@elcamino.edu
