Luna Community College

Automotive Collision Repair
Curriculum Profile
2015-2018

Program Goal:

The goal of this program is to educate students to become entry level Automotive Collision Repair technicians.

Automotive Collision Repair Technology

Certificate

The automotive collision repair technology certificate program is designed in conjunction with the automotive technology and the welding technology programs to produce a highly knowledgeable and skilled entry level collision repair technician. The program covers all aspects of auto body repairs, metalworking, plastic repairs, panel replacements, restoration, refinishing, custom refinishing, basic structural repairs, damage estimating, student portfolio design and collision repair shop management.

The program follows the Automotive Service Excellence (ASE) and the National Automotive Technician Education Foundation (NATEF) curriculum standards. Upon completion of this program a student will receive a certificate and may be eligible to take the Automotive Service Excellence (ASE) certification test.

Completion of this certificate can be applied toward the Associate of Applied Science Degree in Vocational/Technical Studies.

Institutional Proficiency Requirements

In addition to the courses listed below for this program of study, students must also complete institutional proficiencies of ENG095, MATH075 and READ095 that are outlined on page 77of the LCC 2012-2015 Catalog to meet all graduation requirements.

Certificate Requirements - 36 Credit Hours

Program Requirements		**(33 hours)**
AUTO100	Automotive Fundamentals	4
AUTO154	Steering and Suspension	4
CRT100	Introduction to Collision Repair	3
CRT105	Introduction to Refinishing	3
CRT110	Collision Repair Shop Management	3
CRT115	Metal Working	3
CRT120	Collision Repair II	3
CRT125	Refinishing II	3
CRT130	Auto Restoration and Customizing	3
CRT140	Estimation for Collision Repair	3
CRT295	CRT Capstone	1

Approved Electives		(3 hours)
AUTO104	Electrical and Electronic Systems I	5
CRT135	Introduction to Airbrushing	3
SMET105	Computer Use for Technology	3
WLED105	Introduction to Welding	3

AUTO100: Automotive Fundamentals (4 credits)
This course provides the foundation of automotive technology with basic engine theory and operation. Includes lubrication and cooling systems, standards for safety and shop operations, also covers tools and supplies used in the industry. Maintenance procedures and schedules are also covered along with diagnostic concepts. Use of information systems, both printed and computer based, is covered. Industry opportunities and trends are covered along with customer service and professionalism. Practical applications are covered.

Learning Objectives:

- Students will take and pass safety tests, students will learn and comprehend the colors pertaining to OSHA.
- Explain how to properly use equipment in the Automotive shop.
- Identify the different subsystems in the Automobile.
- Identify ASE (Automotive Service Excellence) tests needed to become certified in any of the 8 areas.
- Identify hand tools, and power tools used and how to properly use them.
- Describe how to properly fill out work orders and how to use the different types of diagnostic charts.
- Recognize electrical and electronic circuits in the Automobile
- Identify bolts, and know how to make and repair threads.
- Properly check fluids, know the importance of maintenance, and how to perform an oil change.

Learning Outcomes

- Students will take and pass all safety tests with 100%
- Students will know the components of subsystems of a vehicle
- Students will use hand tools and power tools properly
- A jumper wire will be made by the students, and will know how to use the jumper wire
- Students will be able to identify bolts and know how to make threads in metal for the bolts

AUTO104: Electrical and Electronic Systems I (5 credits)
This course covers basic automotive electricity, electronics fundamentals, theory and applications for automotive circuits. This course will also cover diagnosis and repair of electrical systems and schematic study. Battery, starting and charging systems are specifically studied in this course. Corequisite: AUTO100.

Learning Objectives:

- Will know how to compare voltage, current, and resistance. Will also know how to perform fundamental electrical tests.
- Visually inspect battery, perform basic battery test, safety practices of battery removal, installation, and proper procedure for jumping a battery.
- Describe the safety practices that should be followed when diagnosing, testing, and repairing a starter motor. Adjust a neutral safety switch.
- Inspect, diagnose, remove, and repair charging system components properly and safely.
- Properly inspect, diagnose, and repair ignition system components.

Learning Outcomes

- Students will know how to use a multimeter to perform basic electrical tests
- Will perform a battery inspection and procedures for battery replacement
- Will properly disassemble and reassemble a starter
- Will properly remove and replace an alternator
- Will know how to test electrical components

AUTO154: Steering and Suspension (4 credits)
This course will provide a foundation to the automotive chassis system, including the fundamentals of the chassis system. The course includes theory, inspecting and diagnosing practices with an emphasis on safety, along with the repair procedures and specific equipment operation. Alignment procedures will also be covered. Corequisite: AUTO100.

Learning Objectives:

- Identify the parts of a tire and wheel.
- Identify and describe the major parts of a suspension system.
- Diagnose problems relating to a suspension system.
- Compare the differences between a linkage steering and a rack and pinion steering system.
- Describe caster, camber, and toe adjustment.

Learning Outcomes

- Students will know how to properly mount and dismount tires
- Will know how to properly inspect and replace shocks and struts
- Will know how to properly inspect and replace suspension components
- Will know how to inspect and replace a rack and pinion steering
- Will know how to perform an alignment

CRT100: Introduction to Collision Repair (3 credits)
This is an introductory course covering the basics of Auto Body Repair including safety orientation, hand tools, power tools, equipment, basic metal straightening, and surface preparation.

Learning Objectives:

- Students will learn Body Shop safety
- Students will learn to repair dents properly using body fillers.
- Students will learn to properly use the tools of the trade.
- Students will learn about metal preparation.
- Students will learn how to properly straighten metal.
- Students will learn about proper sanding techniques.
- Students will learn about the different grits of sand papers, wet or dry, grinding discs, etc.
- Students will learn the basics of a collision, whether to determine if it's direct or indirect damage.

Course Learning Outcomes (Competencies)

- Students will learn to repair minor dents and to perform proper surface preparation

- Master proper usage of the tools of the trade, tool safety, body fillers and plastic repair.
- Understand the proper techniques of sanding and stripping techniques.

CRT105: Introduction to Refinishing (3 credits)
This course is an Introduction to Auto Refinishing. The course covers refinishing safety, refinishing equipment, refinishing products, proper use of equipment and refinishing techniques.

Learning Objectives:
- Students will demonstrate shop safety.
- Students must exhibit refinishing safety.
- Students will demonstrate proper use of refinishing equipment.
- Students will have the ability and skills of automotive refinishing.
- Students will touch on various use of refinishing products.

CRT110: Collision Repair Shop Management (3 credits)
This course will cover a shop layout, shop policies, shop maintenance, collision repair estimating, business cost and profits and customer service. Each student will design his or her own shop plans.

Learning Objectives:
- Students will learn Body Shop safety.
- Students will learn how to make a shop layout as if it was their own shop or business.
- Students will learn about costs and profits.
- Students will learn about labor times.
- Students will learn shop maintenance skills.
- Students will learn about profit management skills.
- Most importantly, students will learn about customer service.

Course Learning Outcomes (Competencies)
- Professionalism skills, management skills, advertising skills, actual collision shop observation, planning skills.

Course Learning Outcomes (Competencies)
- Students will learn Refinishing safety.
- Students will learn to use refinishing equipment.
- Students will learn refinishing techniques.
- Students will learn to use Refinishing products.

CRT115: Metal Working (3 credits)
This course will cover metal working in the collision repair field, metal types and various metal working techniques will be covered, practical hands-on applications.

Learning Objectives:
- Students will demonstrate shop safety.
- Students will have the ability to identify all types of metals.

- Students will demonstrate how to stretch metal, shrink metal and form metal.
- Students will have the knowledge of metal working tools and equipment.
- Students will become familiar with mig welding techniques.

Course Learning Outcomes (Competencies)

- Students will learn metal forming, shaping and bending, metal safety, metal tools and equipment safety, hands-on practical application.

CRT120: Collision Repair II (3 credits)
A continuation course to the Intro to Collision Repair, this course is an in-depth study of collision repair featuring body fillers, panel replacement, and non-structural repairs, plastic repairs. Practical hands on applications are included in this course.

Learning Objectives

- The student must demonstrate advanced auto body straightening techniques.
- Proper selection and use of auto body fillers must be demonstrated.
- Auto body replacement panel fitment techniques will be implemented.
- Industry standard Auto Body welding techniques must be performed.
- Proper use of advanced auto body tools must be demonstrated.
- Knowledge of ASE standards, industry standards are required.

Course Learning Outcomes (Competencies)

- Students will learn to use proper straightening techniques.
- Make proper panel replacements.
- Learn proper auto body basic welding techniques.
- Learn to use advanced auto body tools and equipment properly.
- Students will learn to weld safely.

CRT125: Refinishing II (3 credits)
This course is a full in-depth study of refinishing featuring pain preparation, block sanding, spray booth management, masking, paint mixing, color matching, color sanding, buffing and undercoating.

Learning Objectives

- Students must demonstrate proper block and color sanding techniques.
- Students must exhibit spray booth management skills.
- Pain mixing and color matching techniques must be demonstrated.
- Automotive pain surface preparation procedures must be properly executed.
- Professional final paint application techniques must be demonstrated.
- Proper paint buffing skills must be demonstrated.
- Paint product selection, handling and disposal will be done in accordance to local and national standards.

Course Learning Outcomes (Competencies)

- Students will learn proper spray booth management and maintenance.
- Students will learn block sanding and masking techniques.
- Student will learn paint product management.
- Students will learn color management.
- Students will learn to finalize a refinishing job.

CRT130: Auto Restoration and Customizing (3 credits)
This course is an advanced class featuring auto project management, custom body panels fabrication, lead bodywork, metal shrinking, custom interior and exterior modifications, and custom painting, practical hands-on experience. Each student will create his or her own project portfolio.

Learning Objectives:
- Students must demonstrate the ability to successfully plan and organize an auto restoration project.
- Automotive fasteners must be properly identified, organized and labeled.
- All students will create a project portfolio.
- All custom paint designs will be drawn out and planned before pain application.
- Students must keep accurate records of all project expenses.

Course Learning Outcomes (Competencies)
- Properly planning and organizing an auto restoration project, designing and fabricating custom body panels, designing a custom paint job and creating a auto restoration project portfolio

CRT135: Introduction to Airbrushing (3 credits)
Course description: The Introductory course provides the student with the basic skills and techniques of painting with an airbrush.

Learning Objectives:
- Students will learn Airbrush history.
- Students will learn terminology.
- Students will learn basic graphics.
- Students will learn layout and transfer design.
- Course will give the experienced users the ability to enhance their skills.

Course Learning Outcomes (Competencies)
Students will become familiar with professionalism and airbrushing skills for beginners and the more experienced.

CRT 140 Estimation for Collision Repair (3 credits)
This course will cover methods and procedures involved in estimating of collision damage to automobiles.

Learning Objectives:
- Student will be able to make proper estimations of collision damage.

- Student will be able to make visual inspections of collision damage.
- Student will be able to record estimating information.
- Student will be able to estimate costs and profits.

Course Learning Outcomes (Competencies)

- Students will be able to make proper estimations of collision damage.
- Student will be able to make visual inspections of collision damage.
- Student will be able to record estimating information.
- Student will be able to estimate costs and profits.

CRT295: CRT Capstone (1 credit)
This course is for students in their final semester of the collision repair technology program and will prepare the student to take the comprehensive examination. Information/content will come from the core curriculum/program requirements. Study guides, pre-tests, and group sessions will be utilized. Students must also submit a portfolio consisting of coursework completed throughout the core program. A sample automotive service excellence (ASE) test will also be taken.

Learning Objectives:

- The knowledge and experience learned in the collision repair program must be demonstrated.
- Proficiency in the collision repair program will be tested.
- Portfolio and hands-on demonstrations will exhibit skills learned in collision repair program.

Course Learning Outcomes (Competencies)

- Students will complete the Automotive Collision Repair Technology Program.
- Student will be at an entry level Collision Repair Technician.
- Student will be prepare for employment in the Automotive Collision Repair industry

SMET105: Computer Use for Technology (3 credits)
This course is the study of the fundamentals of computer technology software used in engineering technology fields. Emphasis will be placed on technical and scientific computer applications. Topics to be covered will include an introduction to computer concepts, Windows, Microsoft Word, Excel, Access, and PowerPoint, and other specific software applications used to interface various engineering technologies fields.

Course Objectives:

- The objective of the course is to provide students with the computer basics for success in the STEM disciplines. Students will become proficient at basic Microsoft programs and will be introduced to AutoCAD software.

Learning Outcomes: upon completion of the course with a grade of "C" (70%) or better, the student will be able to:

- Demonstrate a knowledge of the course content through quizzes, projects, and exams

- Apply the concepts learned in class to unit projects
- Demonstrate a working knowledge of both Microsoft and AutoCAD software
- Demonstrate a working knowledge of hardware and components

WELD105: Introduction to Welding (3 credits)
This course teaches the fundamentals in the welding processes, shop orientation, and shop safety. Start with oxy/acetylene cutting and welding, and advance into basic MIG,TIG, and stick welding. Plasma cutting will be introduced. Welding will be tested in the flat, horizontal, vertical and overhead positions. Practical applications are covered and pipe welding will be introduced.

Learning Outcomes:
1. Identify some of the common hazards in welding.
2. Explain and identify proper personal protection used in welding.
3. Describe how to avoid welding fumes.
4. Explain some of the causes of welding accidents.
5. Identify and explain uses for material data safety sheets
6. Explain safety techniques for storing and handling bottles.
7. Explain how avoid electrical shock while welding.
8. Identify and explain the use of oxy/fuel cutting equipment.
9. Set up oxy/fuel equipment.
10. Light and adjust an oxy/fuel torch.
11. Proper shut down of bottles.
12. Change cylinders
13. Perform oxy/fuel cutting and welding procedures.

Assessment

Luna Community College defines assessment as a process that will lead to the improvement of student learning. The process must follow four steps as illustrated below.

LCC Assessment Plan

All course offerings, including degree and certificate programs, at Luna Community College are required to follow the four-step assessment process. They include:

1. A list of expected learning outcomes
2. Assessment tools that directly measure those learning outcomes
3. The results of the data, and
4. How the data will be used to improve student learning

Academic Departments as Luna Community College are required to participate in semester "Improving Student Learning" assessment reporting and Student Learning Outcomes Assessment (SLOA) Committee presentations. Every semester, academic departments focus on specific learning outcomes with a targeted student population. Faculty are selected to participate in SLOA; selected faculty participate in developing assessment methods and procedures for their particular course or courses. The faculty give oral presentations at the end of the semester and information gathered is disseminated among SLOA members, faculty and staff. The purpose is to provide a baseline for future improvements.

Visit our web site at www.luna.edu to review LCC's Improving Student Learning (ISL) reports. LCC also abides by the New Mexico state competencies for general education. 22

LUNA COMMUNITY COLLEGE
Standard "Minimal" Requirements for Course Syllabus

Course	course title and other course information including meeting times, dates, room number, credits, semester, prerequisites and/or co-requisites
Faculty	information about the instructor and his or her contact information (e.g., phone number and email). List time and day of office hours for full time faculty
Course Description	use catalog description
Expectations of Students	What do you expect from your students? For example, description of students' responsibilities in the learning process; how you hope the students will approach the course subject/content; take responsibility for their learning; the amount of study time expected in the course, and suggestions on how to succeed in the course.
Course Learning Outcomes (Competencies)	this section will include a list of skills or techniques students will develop from the course. This list will consists of a minimum of four to six quantifiable statements about what students will be able to do after completing the course.
New Mexico CORE Competencies	If teaching a CORE course, the State HED competencies must be stated (e.g., Communications, Mathematics, Laboratory Science, Social & Behavioral Sciences, Humanities & Fine Arts).
Methods of Measuring Learning Outcomes (Competencies)	What tools are used to measure student success based on the learning outcomes?

Evaluation	Indicate how the student will earn a particular grade, such as information about assignments including types of assignments, nature of exams (e.g., take home, open book, in-class) due dates, grading criteria and so forth.
Course Schedule	Add a tentative schedule indicating the course content that will be covered throughout the course (e.g., eight week or sixteen week schedule).
Policies	Include policies such as attendance, academic responsibilities, late assignments, missed exams, cell phones, etc. Add a statement that indicates: for additional student information, refer to the 2012-2015 Student Handbook
Grading Standard	Refer to page 37 of the LCC 2012-2015 Catalog
Textbook(s)	Name of required textbooks(s) and any recommended materials. Include ISBN number(s)
Important Dates	List important dates such as last day to withdraw from the course, holidays, add/drop, midterm, final exam week, spring break and other important dates.
ADA Statement	Add a statement regarding accommodations for students with disabilities
Syllabus Revisions or Changes	Add a statement that indicates the syllabus is subject to change
Internet Courses (non-proctored)	Use the following statement: LCC will ensure firm student identification for examinations through the use of username and password for non proctored exams. As an on-line student, you are responsible for keeping your username and password secure. Your username and password should not be given out as you are responsible for

all assessment, assignments, and on-line communications. Any academic dishonesty/plagiarism will not be tolerated and is grounds for disciplinary actions. [Please refer to page 6 of the LCC 2012-2015 Catalog]