

Last updated: 9/99

San Bernardino Valley College

Course Outline for STROD 010
BEGINNING STREET ROD CONSTRUCTION

I. CATALOG DESCRIPTION:

Department: Automotive

STROD 010: Beginning Street Rod Construction

3 hours lecture, 3 hours laboratory = 4 units

Catalog Description: Theory and practical experience in building a street rod vehicle. Includes instruction in safe work practices, design and construction of frame and chassis systems and components. Body repair, paint preparation, refinishing and welding are also included.

Schedule Description: Theory and practical experience in the construction of a street rod. Safe work practices, design, chassis construction including welding, body repair and refinishing, and assembly are emphasized.

Prerequisite/Corequisite: None

Departmental Advisories: AUTO 084X4 or VEHRST 010

II. NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT: One

III. EXPECTED OUTCOMES FOR STUDENTS:

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

- A. Compare and contrast restoring a vehicle and building a street rod.
- B. Describe ten characteristics of award winning vehicles.
- C. Identify the major components and list eight vehicle systems common to the typical automobile or light truck.
- D. List and describe five current publications related to custom car and street rod building.
- E. Identify and describe twenty different fasteners.
- F. Identify and notify the instructor of potential safety hazards in the shop areas.
- G. Perform a minimum of five disassembly operations on a typical restoration project to industry standards.
- H. Perform cleaning operations on ten chassis or body parts using common methods and machines.
- I. Compare and contrast different methods of rust removal from small and large parts.
- J. Identify common drum and disc brake systems and perform repairs or assemble components to acceptable industry standards.
- K. Prepare body sheet metal or fiberglass for refinishing using current methods and materials.
- L. Compare and contrast at least three different welding methods and materials used in restoration and street rod building.

- M. Maintain an annotated notebook of descriptions and disassembly notes, sketches, and photos of work in progress on project vehicle.

IV. CONTENT:

A. Building vs. Modification of Major Components

- 1. Differences in operations
 - a. Locating a project vehicle
 - b. Choices of body styles
 - c. Costs
- 2. Similarities
 - a. Basic operation
 - b. Preparation for refinishing
 - c. Meticulous work

B. The Street Rod

- 1. Basic systems
 - a. Suspension systems
 - b. Brake systems
 - c. Cooling systems
 - d. Engine design and operation
 - e. Drive train
 - f. Exhaust systems
 - g. Electrical systems
 - h. Accessories
- 2. Modified original
 - a. Chassis and engine
 - b. Body and interior

C. Assessment of project vehicle

- 1. Overview
 - a. Project budget
 - b. Chassis
 - c. Drive train
 - d. Body metal
 - e. Interior and accessories
- 2. Replacement parts
 - a. Original pieces
 - b. New
- 3. Written report-estimate
 - a. Materials
 - b. Timetable for completion
 - c. Visualizing completed project
- 4. Basic welding
 - a. Safe shop practices
 - b. Oxyacetylene
 - c. Metal inert gas
 - d. Practice welds

D. Chassis

1. Frame
 - a. Measurement
 - b. Fabrication materials and techniques
 - c. Cleaning
 - d. Painting
2. Suspension
 - a. Springs
 - b. Control arms
 - c. Preliminary alignment
3. Brakes
 - a. Service brake
 - b. Parking brake
 - c. Assembly, adjustment and road testing
- E. Powertrain components
 1. Engine
 - a. Original/replacement
 - b. Change of model
 2. Transmission
 - a. Original/replacement
 - b. Change of model
 3. Differential
 - a. Original/replacement
 - b. Change of model
 4. Driveline
 - a. Original/replacement
 - b. Change of model
- F. Body Components
 1. Electrical system
 - a. Components
 - b. Wiring harnesses
 2. Upholstery, trim
 - a. Seats
 - b. Panels, headliner
 3. Glass and weatherstripping
 - a. Windshield, back glass
 - b. Door glass and regulators
 - c. Weatherstripping
- G. Body Metalwork
 1. Surveying collision damage
 - a. Front-end
 - b. Side
 - c. Top
 - d. Rear
 2. Repair techniques
 - a. Using body solder
 - b. Using plastic filler

- c. Using fiberglass
 - 3. Panel replacement
 - a. Sectioning-panel removal
 - b. Panel replacement
 - c. Sealing joints
 - 4. Repairing collision damage
 - a. Front-end
 - b. Side
 - c. Top
 - d. Rear
 - 5. Manufactured body, fiberglass
 - a. Price and availability
 - b. Levels of completion as purchased
 - c. Preparation of surfaces
 - 6. Adjustments
 - a. Hoods, front fenders
 - b. Doors
 - c. Trunk lids
 - d. Bumpers
 - e. Headlights
- H. Refinishing Shop Equipment
 - 1. Overview
 - a. Major components
 - b. Safety considerations
 - c. Materials handling
 - 2. Characteristics of great paint jobs
 - a. Great preparation of surfaces
 - b. Selection of good quality materials
 - c. Good application techniques
- I. Refinishing Materials and Their Applications
 - 1. Preparation for painting
 - a. Present condition
 - b. Selection of a “system”
 - c. Following paint makers directions
 - 2. Sanding
 - a. Types and grits of abrasives
 - b. Hand and power sanding techniques
 - c. Guide coat procedures
 - 3. Primers
 - a. Undercoats
 - b. Surfacer
 - c. Glazing putties
 - 4. Thinners, reducers, additives
 - a. Temperature considerations
 - b. Topcoat additives
 - c. Fish eye elimination

- d. Mixing percentages
- 5. Masking
 - a. Types of tape and paper
 - b. Application techniques
- 6. Spray guns and application techniques
 - a. Types of spray guns, spray cans
 - b. Atomization and vaporization
 - c. Applying the paint
 - d. Correct patterns
 - e. Cleaning the gun
 - f. Practice panels
- 7. Metal conditioning and priming
 - a. Selection of materials
 - b. Conditioner mixing and application
 - c. Primer mixing and application
 - d. Drying
- 8. Color and types of paint
 - a. Solid and metallic colors
 - b. Basecoat material types
- J. Refinishing the Vehicle
 - 1. Final preparation steps
 - a. Cleaning booth
 - b. Assembling tools and materials
 - c. Final blow down
 - 2. Mixing materials
 - a. Reading temperature
 - b. Selecting correct thinner/reducer
 - c. Measuring viscosity
 - 3. Application techniques
 - a. Test spray pattern
 - b. Starting and ending points
 - c. Air pressure
 - d. Single stage application
 - e. Basecoat/clearcoat application
 - f. When things go wrong
 - g. Drying
 - 4. Final steps
 - a. Color sanding
 - b. Buffing, sealing
 - c. Waxing
 - d. Preparation for show

V. METHODS OF INSTRUCTION:

The methods of instruction include, but not limited to:

- A. Lecture and direct laboratory demonstration by the instructor.
- B. Guided laboratory practice by the student.

C. Presentations and demonstrations by field experts.

VI. TYPICAL ASSIGNMENTS:

- A. In writing, compare and contrast the modification of an original chassis and an aftermarket production type.
- B. In classroom discussions, be prepared to give five major differences in the design of unibody vehicles versus ladder frame types.
- C. While attending a street rod show, list ten things you view as appearance enhancements and ten that are good mechanical design modifications.
- D. Assemble brake components on a minimum of one wheel.
- E. Participate with one other student in performing preliminary wheel alignment.
- F. Perform preparation steps to bring body parts to primer finishing readiness.

VII. EVALUATION(S):

- A. Methods of Evaluation:
 1. Oral and written tests;
 2. Demonstrate manipulative skills according to industry standards in the performance task;
 3. Active participation in all discussion periods;
 4. Progress presentation(s)
 5. A comprehensive written final exam.
Typical Questions:
 - a. What is a Material Data Safety Sheet?
 - b. Define the term meticulous.
 - c. Explain the advantages and disadvantages of using fiberglass panel compared to steel.
- B. Frequency of Evaluation:
 1. Weekly assignments
 2. One midterm exam
 3. One final exam

VIII. TYPICAL TEXT(S):

Boyd Coddington's How to Build Hot rod Chassis, Tim Remus, Timothy Remus, Boyd Coddington, Motorbooks International, 1992

Boyd Coddington's How to Build Hot Rod Bodywork, Tim Remus, Timothy S. Remus, Motorbooks International, 1993

IX. OTHER SUPPLIES REQUIRED OF STUDENTS:

Safety glasses, notebook