

# Automotive Service & Technology

## Degrees & Certificates

Associate in Science Degree: Automotive Service & Technology

Certificate of Achievement: Automotive Service & Technology

## Program Description

The automotive industry has long recognized the need for skilled, highly trained service technicians. The consumer movement has turned that need into a demand. Today's automobile is a sophisticated, complex machine which requires skilled technicians to keep it running smoothly.

Santa Barbara City College offers two programs in Automotive Service and Technology. It also offers updated auto skills, retraining and entry-level job courses, all offered for lifelong careers with good pay and working conditions and a chance to advance in the exciting high-tech automotive industry.

The Automotive program has been certified by the National Institute for Automotive Service Excellence (ASE) as a "Master" training institution, having met strict industry standards in all eight of the automotive specialty areas. The eight areas of ASE specialization are Engine Repair, Engine Performance, Heating and Air Conditioning, Electrical Systems, Automatic Transmissions, Manual Transmission and Axle, Brakes and Front End.

## Department Offices

*Division:* Technologies

*Department Co-Chair:* Dave Brainerd (A-123, ext. 2220)

*Department Co-Chair:* Robert Stockero (A-178, ext. 2836)

*Dean:* Erika Endrijonas (A-218, ext. 2721)

## Faculty & Offices

Robert Stockero (A-178, ext. 2836)

David Brainerd (A-123, ext. 2220)

Tim Gilles (OE-180, ext. 2389)

## Requirements for A.S. Degree: Automotive Service & Technology

The Associate Degree will be awarded upon completion of both department *and* college requirements

### Department Requirements (43.2 units)

AUTO 101 — Introduction to Auto Mechanics . . . . .	3
AUTO 110 — Fundamentals of Auto Servicing . . . . .	3
AUTO 111 — Engine Rebuilding . . . . .	7
AUTO 112 — Brakes, Suspension & Steering . . . . .	4.6
AUTO 113 — Auto Fuel & Air Conditioning Systems . . . . .	4.6
AUTO 114 — Automotive Power Train . . . . .	7
AUTO 115 — Automotive Electricity . . . . .	7
AUTO 116 — Engine Performance . . . . .	7

### *Recommended Electives:*

AUTO 102 — Basic Car Care, Maintenance and Repair . . .	3
AUTO 205 — OBD2/Basic Clean Air Course . . . . .	1.2
AUTO 207 — Smog Check Technician Update . . . . .	1
AUTO 217 — Automotive Specialty I . . . . .	2
AUTO 218 — Automotive Specialty II . . . . .	3
AUTO 219/CNEE 219 — Adv Auto Electronics . . . . .	4
AUTO 220 — Emission Controls/ Basic Clean Air Car Course . . . . .	3
AUTO 290 — Work Experience . . . . .	2-4

Complete each required course with a minimum grade of "C".

### College Requirements

For complete information, see "Graduation Requirements" in the *Catalog* Index.

### Sample Program of Study: A.S. Degree (Two Years)

<i>First Semester</i>	<i>Units</i>
AUTO 101 — Introduction to Auto Mechanics . . . . .	3
AUTO 111 — Engine Rebuilding . . . . .	7
*MATH 100 or higher . . . . .	4
*ENG 110/120 — Composition & Reading <i>or</i>	
*ENG 110H — Composition & Reading, Honors . . . . .	4
Total . . . . .	18

<i>Second Semester</i>	<i>Units</i>
AUTO 110 — Fundamentals of Auto Servicing . . . . .	3
AUTO 114 — Auto Power Train (Fall Semester) <b>or</b> AUTO 115 — Auto Electricity (Spring Semester) . . . . .	7
*Lab Science . . . . .	4
*Oral Communication . . . . .	3
*Physical Education . . . . .	1
Total . . . . .	18

<i>Third Semester</i>	<i>Units</i>
AUTO 113 — Auto Fuel & Air Cond Systems (Fall) <b>or</b> AUTO 112 — Brakes, Suspension & Steering (Spring) . . . . .	4.6
AUTO 116 — Engine Performance . . . . .	7
*History or Political Science . . . . .	3
*Physical Education . . . . .	1
** AUTO 220 — Emission Controls/Basic Clean Air Car Course . . . . .	3
Total . . . . .	15.6-18.6

<i>Fourth Semester</i>	<i>Units</i>
<i>Take course(s) not yet completed:</i>	
AUTO 113 — Auto Fuel & Air Cond. Systems (Fall) <b>or</b> AUTO 112 — Brakes, Suspension & Steering (Spring) . . . . .	4.6
AUTO 114 — Auto Power Train (Fall) <b>or</b> AUTO 115 — Auto Electricity (Spring) . . . . .	7
*Humanities/Multicultural . . . . .	3
<i>Take one of the following:</i>	
** AUTO 220 —Emission Control/ Basic Clean Air Car Course . . . . .	3
**AUTO 219 — Adv. Auto Electronics . . . . .	4
**AUTO 217 <b>or</b> 218 — Auto Specialty I <b>or</b> II . . . . .	2-3
**AUTO 290 — Work Experience . . . . .	2-4
Total . . . . .	14-18.6

\*General Ed. Requirements: See this Catalog for complete course listings.

\*\*Recommended but not required for either Certificate of Achievement or A.S. Degree.

## Requirements for Certificate of Achievement: Automotive Service & Technology

### Department Requirements (43.2 units)

AUTO 101 — Introduction to Auto Mechanics . . . . .	3
AUTO 110 — Fundamentals of Auto Servicing . . . . .	3
AUTO 111 — Engine Rebuilding . . . . .	7
AUTO 112 — Brakes, Suspension & Steering . . . . .	4.6
AUTO 113 — Auto Fuel & Air Conditioning Systems . . . . .	4.6
AUTO 114 — Automotive Power Train . . . . .	7
AUTO 115 — Automotive Electricity . . . . .	7
AUTO 116 — Engine Performance . . . . .	7

### Recommended Electives:

AUTO 102 — Basic Car Care, Maintenance and Repair . . . . .	3
AUTO 205 — OBD2/Basic Clean Air Course . . . . .	1.2
AUTO 207 — Smog Check Technician Update . . . . .	1
AUTO 217 — Automotive Specialty I . . . . .	2
AUTO 218 — Automotive Specialty II . . . . .	3
AUTO 219/CNEE 219 — Advanced Auto Electronics . . . . .	4
AUTO 220 — Emission Controls/ Basic Clean Air Car Course . . . . .	3
AUTO 290 — Work Experience . . . . .	2-4

Complete each required course with a minimum grade of "C".

### Sample Program of Study: Certificate (One Year)

<i>First Semester</i>	<i>Units</i>
Auto 101 — Introduction to Auto Mechanics . . . . .	3
AUTO 110 — Fund of Auto Servicing . . . . .	3
AUTO 111 — Engine Rebuilding . . . . .	7
AUTO 113 — Auto Fuel & Air Cond Systems <b>or</b> AUTO 112 — Brakes, Suspension & Steering . . . . .	4.6
Total . . . . .	17.6

<i>Second Semester</i>	<i>Units</i>
AUTO 114 — Auto Power Train (Fall Semester) <i>or</i>	
AUTO 115 — Auto Electricity (Spring Semester) . . . . .	7
AUTO 116 — Engine Performance . . . . .	7
<i>The following course is recommended (not required):</i>	
AUTO 290 — Work Experience. . . . .	2-4
	Total. . . . . 14-18
 <i>Third Semester</i>	 <i>Units</i>
<i>Take course(s) not yet completed:</i>	
AUTO 113 — Fuel Mgmt & Air Cond Systems <i>or</i>	
AUTO 112 — Brakes, Suspension & Steering . . . . .	4.6
AUTO 114 — Auto Power Train (fall semester) <i>or</i> . . . . .	7
AUTO 115 — Auto Electricity. . . . .	4
<i>The following courses are recommended (not required):</i>	
AUTO 217 — Auto Specialty I <i>or</i> . . . . .	2
AUTO 218 — Auto Specialty II . . . . .	3
AUTO 290 — Work Experience. . . . .	2-4
	Total. . . . . 11.6-18.6

## Course Descriptions

### **AUTO 101 — Introduction to Auto Mechanics** **(3) F, S — CSU**

*Skills Advisories: Eligibility for ENG 103*

Lecture/demonstration course introducing the operation and maintenance of the modern automobile; emphasis on the theory of basic operating systems, including engine, electrical, chassis and driveline.

### **AUTO 102 — Basic Car Care, Maintenance and Repair** **(3) Summer — CSU**

*Skills Advisories: Eligibility for ENG 103*

Introductory study and practice in basic car care, maintenance and repair. Students gain laboratory experience, performing service and minor repairs.

### **AUTO 110 — Fundamentals of Automotive Servicing**

**(3) F, S — CSU**

*Skills Advisories: Eligibility for ENG 100 and ENG 103*  
*Course Advisories: AUTO 101, concurrently*

Introductory lecture/lab course covering maintenance and diagnosis procedures used in the automotive service industry. Lab experiences in maintenance and service areas of engine lubrication, underhood, undercar, tire and wheel, cooling system, belts and hoses, fuel system, battery and electrical system, engine maintenance and performance, brakes and wheel bearings.

### **AUTO 111 — Engine Rebuilding**

**(7) F, S — CSU**

*Skills Advisories: Eligibility for ENG 103*  
*Course Advisories: AUTO 101 and AUTO 110*

Lecture/lab course on generic theory and repair of automotive engines. The valve train and lower end assemblies are covered in detail. Engine problem diagnosis, service and repair, engine rebuilding and machining, and performance enhancement emphasized.

### **AUTO 112 — Brakes, Suspension and Steering**

**(4.6) S — CSU**

*Skills Advisories: Eligibility for ENG 103*  
*Course Advisories: AUTO 101 and AUTO 110*

Principles of brakes, suspension and steering systems, including wheel alignment and tire service. Includes disc and drum brakes, brake power assist units, anti-lock braking, tire repair, wheel balancing, steering systems, two and four wheel alignment, and all related suspension systems. Live vehicle laboratory study of lecture material. NATEF-certified course.

### **AUTO 113 — Automotive Fuel and Air Conditioning Systems**

**(4.6) F — CSU**

*Skills Advisories: Eligibility for ENG 103*  
*Course Advisories: AUTO 101 and AUTO 110*

Principles of automotive fuel supply systems, carburetion, fuel injection heating, ventilation and air conditioning (HVAC) systems. Live vehicle repair in lab. NATEF-certified course.

**AUTO 114 — Automotive Power Train**

**(7) F — CSU**

*Skills Advisories: Eligibility for ENG 103*

*Course Advisories: AUTO 101 and AUTO 110*

Principles of the automotive power train, including the clutch, standard and automatic transmissions and transaxles, C/V joints, drive shafts and differentials. NATEF-certified course.

**AUTO 115 — Automotive Electricity**

**(7) S — CSU**

*Skills Advisories: Eligibility for ENG 103*

*Course Advisories: AUTO 101 and AUTO 110*

Study of the complete automotive electrical system, including theory, the battery, starting system, charging system, wiring, lighting and body electrical systems. Theory of operation covered in lecture; testing, diagnosis and repair applied in lab. NATEF-certified course.

**AUTO 116 — Engine Performance**

**(7) F, S — CSU**

*Skills Advisories: Eligibility for ENG 103*

*Course Advisories: AUTO 101 and AUTO 110*

Principles of engine performance diagnosis and maintenance using modern, specialized equipment. Required by Bureau of Auto Repair to enroll in emission technician licensing program. NATEF-certified course.

**AUTO 205 — OBD2/Basic Clean Air Car Course**

**(1.2) S**

Understanding second-generation on-board diagnostics and use of OBD2-compliant scan tools. Course fulfills the BAR update training requirement for emission technicians. (AUTO 220 is also required and can be taken concurrently).

**AUTO 207 — Smog Check Technician Update**

**(1.0) F,S**

Smog Check Technician Update Training Course. The California Bureau of Auto Repair requires this course for anyone applying for an EA or EB smog check license. It is also required by the BAR as update training for anyone interested in renewing a smog check license.

**AUTO 217 — Automotive Specialty I**

**(2) F, S**

*Prerequisites: AUTO 112 or AUTO 113 or AUTO 114 or AUTO 115*

*Skills Advisories: Eligibility for ENG 100*

Designed to further increase the skill and knowledge of the student in the ASE (Automotive Service Excellence) specialty area(s) of choice, working to trade standards. The eight areas of ASE specialization are Engine Repair, Engine Performance, Heating and Air Conditioning, Electrical Systems, Automatic Transmissions, Manual Transmission and Axle, Brakes and Front End.

**AUTO 218 — Automotive Specialty II**

**(3) F, S**

*Prerequisites: AUTO 111 or AUTO 116*

*Skills Advisories: Eligibility for ENG 100*

Designed to further increase the skill and knowledge of the student in the ASE (Automotive Service Excellence) specialty area(s) of choice, working to trade standards. The eight areas of ASE specialization are Engine Repair, Engine Performance, Heating and Air Conditioning, Electrical Systems, Automatic Transmissions, Manual Transmission and Axle, Brakes and Front End.

**AUTO 219/CNEE 219 — Advanced Automotive Electronics**

**(4) S — CSU**

*Skills Advisories: Eligibility for ENG 100 and ENG 103*

Provides basic theory and practice of automotive electronic system operation and trouble-shooting. Covers the basic building blocks of circuits and digital systems. Focus is on semiconductors and computer systems as applied to engine control.

**AUTO 220 — Emission Controls/Basic Clean Air Car Course**

**(3) S — CSU**

*Skills Advisories: Eligibility for ENG 103*

Emission control operation and diagnosis. Includes preparation for California State certification exam. Fulfills part of the Bureau of Auto Repair Basic Area Technician license requirement. (AUTO 205 is also required and can be taken concurrently).

**AUTO 225 — Advanced Clean Air  
Course Update 1**

**(0.5) S**

*Skills Advisories: None*

Designed to instruct vehicle-loaded mode testing with the use of BAR 97 equipment. Five-gas analysis, catalytic converter testing, and diagnostic procedures are presented. (Fulfills BAR 8-hour transition course requirement).

**AUTO 235 — Advanced Clean Air  
Course Update 2**

**(1.2) S**

*Skills Advisories: None*

Satisfies Bureau of Auto Repair requirement to become licensed as an “Advanced Emission Specialist” smog inspector technician. Includes NOx emission diagnosis, digital oscilloscope, oxygen sensor waveform analysis, catalytic converter testing, and vehicle emissions testing procedures for the Enhanced Area program.

**AUTO 290 —Work Experience in Automotive  
Service and Technology**

**(2-4) F, S**

*Skills Advisories: Eligibility for ENG 100 and ENG 103*

Supervised automotive employment for students whose career objectives, automotive course studies and employment complement each other. The student must be employed in an occupation directly related to the Automotive major. Must also be enrolled in no less than seven (7) units, including Work Experience.