

# Automotive Service and Technology

## Degrees and Certificates

Associate in Science Degree: Automotive Service and Technology

Certificate of Achievement: Automotive Service and 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.

## Program Student Learning Outcomes

### *Automotive Certificate of Achievement*

1. Students will develop skills to advance their knowledge as automotive technicians.
2. Students will conduct themselves on the job as professionals, including practicing safety precautions to prevent accidents.
3. Students will become lifelong learners and advocates for the automotive industry.

### *Automotive Services and Technology Degree*

1. Students will develop skills to advance their knowledge as automotive technicians.
2. Students will conduct themselves on the job as professionals, including practicing safety precautions to prevent accidents.

3. Students will become lifelong learners and advocates for the automotive industry.

## Department Offices

*Division:* Technologies

David Brainerd, *Chair* (A-123, ext. 2220)

Alan Price, *Dean* (A-218, ext. 3044)

## Faculty and Offices

David Brainerd (A-123, ext. 2220)

Russell Granger

Robert Stockero (A-178, ext. 2836)

## Requirements for AS Degree: Automotive Service and 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 and Steering.....         | 4.6 |
| AUTO 113 — Auto Fuel and 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 207 — Smog Check Technician Update.....            | 1   |
| AUTO 217 — Automotive Specialty I.....                  | 2   |
| AUTO 218 — Automotive Specialty II.....                 | 3   |
| CNEE 219 — Adv Auto Electronics .....                   | 4   |
| 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: AS Degree  
(Two Years)**

| <i>First Semester</i>   | <i>Units</i> |
|---|--------------|
| AUTO 101 — Introduction to Auto Mechanics.....  | 3            |
| AUTO 111 — Engine Rebuilding .....  | 7            |
| *MATH 95 or higher .....  | 4            |
| *ENG 110/120 — Composition and Reading <b>or</b><br>*ENG 110H — Composition and 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><br>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 and Air Cond Systems (Fall) <b>or</b><br>AUTO 112 — Brakes/Suspension/Steering (Spring) ..... | 4.6          |
| AUTO 116 — Engine Performance .....  | 7            |
| *History or Political Science.....   | 3            |
| *Physical Education.....   | 1            |
| Total.....   | 15.6-18.6    |

| <i>Fourth Semester</i>  | <i>Units</i> |
|---|--------------|
| <i>Take course(s) not yet completed:</i>  |              |
| AUTO 113 — Auto Fuel and Air Cond. Systems (Fall) <b>or</b><br>AUTO 112 — Brakes, Suspension and<br>Steering (Spring) ..... | 4.6          |
| AUTO 114 — Auto Power Train (Fall) <b>or</b><br>AUTO 115 — Auto Electricity (Spring).....                                   | 7            |
| *Humanities/Multicultural .....   | 3            |

|  |         |
|--|---------|
| <i>Take one of the following:</i>                              |         |
| **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 AS Degree.*

**Requirements for Certificate of Achievement:  
Automotive Service and 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 and Steering.....         | 4.6 |
| AUTO 113 — Auto Fuel and 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 207 — Smog Check Technician Update.....            | 1   |
| AUTO 217 — Automotive Specialty I.....                  | 2   |
| AUTO 218 — Automotive Specialty II.....                 | 3   |
| CNEE 219 — Advanced Auto Electronics .....              | 4   |
| 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 and Air Cond Systems <b>or</b><br>AUTO 112 — Brakes, Suspension and Steering..... | 4.6          |
| Total.....   | 17.6         |

| <i>Second Semester</i>   | <i>Units</i> |
|--|--------------|
| AUTO 114 — Auto Power Train (Fall Semester) <b>or</b><br>AUTO 115 — Auto Electricity (Spring Semester) ..... | 7            |
| AUTO 116 — Engine Performance .....  | 7            |

The following course is recommended (not required):

|                                 |       |
|---------------------------------|-------|
| AUTO 290 — Work Experience..... | 2-4   |
| Total.....                      | 14-18 |

Third Semester Units

Take course(s) not yet completed:

|   |     |
|---|-----|
| AUTO 113 — Fuel Mgmt and Air Cond Systems <i>or</i>         |     |
| AUTO 112 — Brakes, Suspension and Steering.....             | 4.6 |
| AUTO 114 — Auto Power Train (fall semester) <i>or</i> ..... | 7   |
| AUTO 115 — Auto Electricity.....                            | 4   |

The following courses are recommended (not required):

|   |           |
|---|-----------|
| 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 |

### Program Cost and Outcome

For planning purposes, the webpage below provides information on the cost of attendance, program length (assuming a student attends full-time), financing options and historical student completion rates:

[www.sbcc.edu/financialaid/gainfulemployment/Automotive%20Service%20and%20Technology.htm](http://www.sbcc.edu/financialaid/gainfulemployment/Automotive%20Service%20and%20Technology.htm)

## Automotive Services Courses

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

*Skills Advisories: Eligibility for ENG 103*

*Hours: 54 lecture*

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 101A — Introduction to Auto Mechanics (3) — CSU**

*Hours: 54 lecture*

Lecture/demonstration course introducing the operation and maintenance of the modern automobile and shop safety; emphasis on the theory of basic operating systems including the electrical, fuel ignition, and electronics and computer controls.

### **AUTO 101B — Introduction to Auto Mechanics (3) — CSU**

*Hours: 54 lecture*

Lecture/demonstration course introducing the operation and maintenance of the modern automobile and shop safety. The basic operating systems covered are the cooling, brake, steering, suspension, drivetrain and air conditioning systems.

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

*Skills Advisories: Eligibility for ENG 103*

*Hours: 90 (36 lecture, 54 lab)*

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) — CSU**

*Skills Advisories: Eligibility for ENG 98 and 103*

*Course Advisories: AUTO 101, concurrently*

*Hours: 90 (36 lecture, 54 lab)*

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

### **AUTO 110A — Fundamentals of Automotive Servicing (3) — CSU**

*Hours: 90 (36 lecture, 54 lab)*

Introductory lecture/lab course covering maintenance and diagnostic procedures used in the automotive service industry. Emphasis is on lubrication, underhood and undercar inspections, electrical systems service, fuel and ignitions systems service, and computer control diagnosis.

### **AUTO 110B — Fundamentals of Automotive Servicing (3) — CSU**

*Hours: 90 (36 lecture, 54 lab)*

Introductory lecture/lab course covering maintenance and diagnostic procedures used in the automotive service industry. Emphasis is on lubrication, underhood and undercar inspections, electrical systems service, fuel and ignitions systems service, and computer control diagnosis.

**AUTO 111 — Engine Rebuilding**

**(7) — CSU**

*Skills Advisories: Eligibility for ENG 103*

*Course Advisories: AUTO 101 and 110 with minimum grade of "C"*

*Hours: 216 (81 lecture, 135 lab)*

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) — CSU**

*Skills Advisories: Eligibility for ENG 103*

*Course Advisories: AUTO 101 and 110*

*Hours: 144 (54 lecture, 90 lab)*

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

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

**(4.6) — CSU**

*Skills Advisories: Eligibility for ENG 103*

*Course Advisories: AUTO 101 and 110*

*Hours: 144 (54 lecture, 90 lab)*

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) — CSU**

*Prerequisites: AUTO 111 with minimum grade of "C"*

*Skills Advisories: Eligibility for ENG 103*

*Course Advisories: AUTO 101 and 110*

*Hours: 216 (81 lecture, 135 lab)*

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) — CSU**

*Skills Advisories: Eligibility for ENG 103; proficiency in MATH 1*

*Prerequisites: AUTO 101 and 110*

*Hours: 216 (81 lecture, 135 lab)*

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) — CSU**

*Skills Advisories: Eligibility for ENG 103*

*Course Advisories: AUTO 101 and 110*

*Hours: 216 (81 lecture, 135 lab)*

Principles of engine performance diagnosis and maintenance, ignition and emission controls. Drivability, vehicle emissions and fuel economy concerns also addressed. Lab study includes engine condition testing, ignition system testing, emission testing and electronic scan tools.

**AUTO 207 — Smog Check Technician Update**

**(1.0)**

*Hours: 18 lecture*

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)**

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

*Skills Advisories: Eligibility for ENG 98*

*Hours: 108 lab*

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)**

*Prerequisites: AUTO 111 or 116*

*Skills Advisories: Eligibility for ENG 98*

*Hours: 162 lab*

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 221 — Principles of Hybrid and Electric Drives**

**(2) — CSU**

*Hours: 36 lecture*

Study of hybrid, plug-in hybrid and electric vehicle powertrains. Topics include high-voltage battery packs, inverters and motor-generators. Includes hands-on exercises using a second-generation Toyota Prius in a lab setting. Suitable for anyone interested in advanced automotive technology.

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

**(2-4)**

*Skills Advisories: Eligibility for ENG 98 and 103*

*Hours: 120-300 lab*

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.