

**Course Outline**  
**AUTO 121**  
**Servicing Automotive Brake and Suspension Systems**  
**5 Credit Hours**  
**3 Lecture Hours**  
**6 Lab Hours**

**The Community College of Baltimore County**

**Description**

**Servicing Automotive Brake and Suspension Systems**

Introduces automotive suspension and brake systems, components, operation, and service procedures; includes hydraulic service, drum and rotor service, and disc brake service, drum brake service, power brake service, wheel balancing, and tire service. \$20.00 fee required

**Overall Course Objectives**

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

1. Diagnose power non-rack and pinion steering gear binding, uneven turning effort, looseness, hard steering, fluid leakage problems, and determine needed repairs.
2. Diagnose power rack and pinion steering gear vibration, looseness, hard steering problems, and determine needed repairs.
3. Flush, fill, and bleed power steering system.
4. Remove, inspect, replace, and adjust strut (compression/tension) rods and bushings.
5. Remove, inspect, and replace MacPherson strut cartridge or assembly, strut coil spring, insulators, and upper strut bearing mount.
6. Check and adjust front and rear wheel camber and determine needed repairs.
7. Check and adjust caster and determine needed repairs.
8. Check and adjust front wheel toe and adjust as needed.
9. Check and adjust rear wheel toe and adjust as needed.
10. Check rear wheel thrust angle and determine needed repairs.
11. Diagnose tire wear patterns and determine needed repairs.
12. Balance wheel and tire assembly (static and dynamic).
13. Remove, bench bleed, and replace master cylinder.
14. Remove, clean (using proper safety procedures), inspect, and measure brake drums and service or replace as needed.
15. Mount brake drum on lathe, machine-braking surface.
16. Remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, backing support plates, lubricate and reassemble.

17. Reinstall wheel, torque lug nuts, and make final checks and adjustments.
18. Remove, clean, inspect pads and retaining hardware and determines needed service.
19. Remove and replace rotor.
20. All other NATAF Tasks from master course list.

### **Major Topics**

1. Theory of brake physics and operation
2. Diagnosis of the brake system
3. Theory of suspension and steering geometry and adjustment
4. Diagnosis of the suspension and steering system
5. Practical learning revolves around front-end alignment and brake service

### **Course Requirements**

#### One Term Paper

1. Topic of the paper will be selected by the student and should relate to the subject material of the course.
2. The paper should be 6 to 8 pages in length, typewritten, and double-spaced. It should include in addition to the 6 to 8 pages of text, an author and title page and bibliography utilizing a minimum of three reference resources excluding classroom materials.
3. All papers are due when 80% of the class sessions are completed. Papers submitted late will be deducted one letter grade.

#### Grading/Exams:

Grading procedures will be determined by the individual faculty member and will be provided on the first day of class. A student can expect a minimum of eight grades from the following categories:

1. Quizzes
2. Lab projects
3. Written paper
4. Homework assignments
5. Midterm exam
6. Class participation
7. Comprehensive final (required)

### **Other Course Information**

This course is an Automotive Technology core course.