

NASSAU BOCES - ADULT EVENING PROGRAM  
Joseph M. Barry Career & Technical Education Center  
1196 Prospect Ave.  
Westbury, NY 11590

COURSE OUTLINE

Course Name: **Auto Mechanics– II (Steering and Brakes)**  
Weeks: 10  
Sessions: 20  
Hours: 60  
Days/Time: Mon/Wed, 7-10 pm  
Instructor: Ed Serafin  
Required Textbook: Automotive Technology: A Systems Approach, 4<sup>th</sup> Edition; ERJAVEC  
Prerequisites: Auto Mechanics-I  
Adult evening Office: (516) 622-6950

Course Overview:

This program is a continuation of Auto Mechanics I and covers complete hydraulic brake systems, including master and wheel cylinders; disk-brake calipers, “vacuum boosters,” and the refinishing of drum and disc brakes. Power and manual steering systems (including rack and pinion) and suspension parts are included. Front end alignment is also covered.

Auto Mechanics Certificate: Requires Auto Mechanics I, Auto Mechanics II, Auto Mechanics III and Auto Mechanics IV for a total of 240 hours.

Course Topics

***BRAKES***

- Week 1 Course Introduction/Safety/Tools  
Evolution/History and advancements of brake system The importance of training  
Explain and demonstrate the different brake configurations/drum brakes/disc brakes.  
Theory of hydraulics and leverage.
- Week 2 How to use the micrometer and a veneer caliper/brake drum micrometer.  
Explain and show how to use a brake lathe.  
Measuring and resurfacing of drums and rotors.  
Explain the Difference of bonded, riveted, pads and shoes.  
Rebuild wheel cylinders and calipers.
- Week 3 Rebuild a master cylinder.  
Test on identification of brake parts, drum brakes and disc brakes.  
Explain the different power brake booster systems/vacuum/hydro booster/electric over hydraulic.  
Explain the various brake valves/combo, proportioning/metering/check.

- Week 4      Bleeding a brake system/power/manual.  
 Checking and repacking of wheel bearings.  
 Checking and replacing of brake hoses/lines.  
 Perform front disc brake job.  
 Perform rear front brake job/disc brake job.
- Week 5      Diagnosing brake problems.  
 Explain, demonstrate and diagnose the operation of the parking brake system.  
 Explain the operation of a A.B.S. system/ show all parts and their functions.  
 Final Exam.

### ***STEERING AND SUSPENSION***

- Week 6      Course Introduction/safety/tools.  
 Evolution/history and advancements of the steering and suspension systems/the importance of training.  
 Theory of steering and suspension systems.  
 Explain and demonstrate the different steering systems/parallelogram steering/rack and pinion.
- Week 7      Explain and demonstrate the different suspension systems/Ackerman front beam/short arm/long arm  
 independent suspension/McPherson struts.  
 Explain and demonstrate the removal and installation of various front end components/McPherson  
 struts/upper lower control arms/ball joints.  
 Checking and replacing/tie rod ends/center links/idler arms/pitman arms/steering boxes.  
 Checking and replacing rack and pinion.
- Week 8      Explain operation of electronic/electric steering rack and pinion.  
 Explain and demonstrate the diagnosis and repair of various steering problems.  
 Explain and demonstrate the diagnosis and repair of various suspension problems.  
 Test on identification of steering and suspension parts.
- Week 9      Explain and demonstrate and perform tire change on tire changing machine.  
 Explain and demonstrate and perform a balance of tire on tire balance machine.  
 Explain and demonstrate the various adjustable front end alignment procedures toe/camber/caster/toe  
 out on turn/tracking.  
 Explain and demonstrate various non-adjustable alignment specifications/ S.A.I. steering angle  
 inclination.
- Week 10     Demonstrate proper use of toe bar.  
 Demonstrate proper use of caster/camber alignment gauge.  
 Explain and demonstrate use of four (4) wheel alignment machine.  
 Final Exam.