



## Syllabus for AT-12 Automotive Braking Systems

### Course Information

Semester & Year: Spring Semester 2022

Course ID & Section #: AT-12-E3031

Instructor's name: Ernest Shull

Day/Time of required meetings: Tuesday, Thursday 08:15AM - 12:35PM

Location: AT-128

Course units: 4

### Instructor Contact Information

Office location: AT-129A

Office hours: Monday, Wednesday 12:00PM – 1:00PM

Phone number: 707-476-4221

Email address: Ernest-Shull@redwoods.edu

### Catalog Description

A course covering theory and principles of modern braking systems. Hydraulic principles, coefficients of friction, and thermodynamics will be discussed. Diagnosis, repair, overhaul, and adjustment procedures of drum, disc/drum, and four-wheel disc systems will be emphasized. Anti-lock Braking Systems (ABS) diagnostics, servicing, and repair procedures will also be covered. The course will cover common domestic, import, and light truck vehicles only. The course is designed in conjunction with Automotive Service Excellence (ASE) Education Foundation standards and subsequently will prepare the student for the ASE Brakes Certification Examination.

### Course Student Learning Outcomes

1. Perform general brake systems diagnosis.
2. Diagnose and repair hydraulic systems.
3. Diagnose and repair disc/drum brakes.

### Prerequisites/co-requisites/ recommended preparation

none

### Accessibility

College of the Redwoods is committed to making reasonable accommodations for qualified students with disabilities. If you have a disability or believe you might benefit from disability-related services and accommodations, please contact your instructor or [Disability Services and Programs for Students](#) (DSPS). Students may make requests for alternative media by contacting DSPS based on their campus location:

- Eureka: 707-476-4280, student services building, 1<sup>st</sup> floor
- Del Norte: 707-465-2324, main building near library
- Klamath-Trinity: 530-625-4821 Ext 103

If you are taking online classes DSPS will email approved accommodations for distance education classes to your instructor. In the case of face-to-face instruction, please present your written accommodation

request to your instructor at least one week before the needed accommodation so that necessary arrangements can be made. Last minute arrangements or post-test adjustments usually cannot be accommodated.

## **Student Support**

Good information and clear communication about your needs will help you be successful. Please let your instructor know about any specific challenges or technology limitations that might affect your participation in class. College of the Redwoods wants every student to be successful.

## **Evaluation & Grading Policy**

Course Grading System

Theory Portion

Test I Brake Basics & Inspection 60 points

Test II Master Cylinder Hydraulic System 60 points

Test III Drum Brake Systems 60 points

Test IV Disc Brake Systems 60 points

Test V Anti-Lock Brake Systems 60 points

Assignments & Participation 50 points

Comprehensive Final Exam 100 points

Total possible Points 450 points

Extra Credit:

Each student may arrange with instructor to read and report on a topic related to brakes from a source other than the course text or the internet i.e. trade publications, library reference material, magazines, newspaper articles, etc... The report must be no less than one page typed and no longer than three pages. You must properly cite your references on a separate page. You may earn up to 50 points per report and you may turn in a maximum of 1 report per semester. Please inform the instructor and agree on a topic before to doing this assignment.

Laboratory Portion:

Brake System Inspection 65 points

Master Cylinder Hydraulic System Service 90 points

Drum Brake System Service 90 points

Disc Brake System Service 90 points

Anti-Lock Brake Service 65 points

Total Possible Points 400 points

Lab Final Exam 150 Points

Total Course Points 1000

Each student is expected to perform a complete brake system overhaul. Includes; remove calipers, wheel cylinders, drain & flush fresh fluid through master cylinder hydraulic system, machine all rotors and drums to specification, replace and adjust pads and shoes, adjust parking brake to specification. Instructor will test drive for verification of performance and pedal height. Evaluation will be based on work being performed completely, correctly, and in a reasonable time when compared to the flat-rate time

## Admissions deadlines & enrollment policies

### Spring 2022 Dates

- *Classes begin: 01/15/22*
- *Last day to add a class: 01/21/22*
- *Martin Luther King, Jr's Birthday (all campuses closed: 01/17/22*
- *Last day to drop without a W and receive a refund: 01/28/22*
- *Census date (or 20% into class duration): 01/31/22*
- *Last Day to file P/NP (only courses where this is an option) 02/11/22*
- *Lincoln's Birthday (all campuses closed): 02/18/22*
- *Presidents Day (all campuses closed): 02/21/22*
- *Last day to petition to graduate or apply for certificate: 03/03/22*
- *Spring Break (no classes): 03/14/22-03/19/22*
- *Last day for student-initiated W (no refund): 04/01/22*
- *Last day for faculty-initiated W (no refund): 04/01/22*
- *Final examinations: 05/07/22-05/13/22*
- *Semester ends: 05/13/22*
- *Grades available for transcript release: approximately 05/30/22*

## Canvas Information

If using Canvas, include navigation instructions, tech support information, what Canvas is used for, and your expectation for how regularly students should check Canvas for your class.

Log into Canvas at <https://redwoods.instructure.com>

Password is your 8 digit birth date

For tech help, email [its@redwoods.edu](mailto:its@redwoods.edu) or call 707-476-4160

Canvas Help for students: <https://webapps.redwoods.edu/tutorial/>

Canvas online orientation workshop: [Canvas Student Orientation Course \(instructure.com\)](#)

## Community College Student Health and Wellness

Resources, tools, and trainings regarding health, mental health, wellness, basic needs and more designed for California community college students, faculty and staff are available on the California Community Colleges [Health & Wellness website](#).

[Wellness Central](#) is a free online health and wellness resource that is available 24/7 in your space at your pace.

Students seeking to request a counseling appointment for academic advising or general counseling can email [counseling@redwoods.edu](mailto:counseling@redwoods.edu).

## Emergency procedures / Everbridge

College of the Redwoods has implemented an emergency alert system called Everbridge. In the event of an emergency on campus you will receive an alert through your personal email and/or phones.

Registration is not necessary in order to receive emergency alerts. Check to make sure your contact information is up-to-date by logging into WebAdvisor <https://webadvisor.redwoods.edu> and selecting 'Students' then 'Academic Profile' then 'Current Information Update.'

Please contact Public Safety at 707-476-4112 or [security@redwoods.edu](mailto:security@redwoods.edu) if you have any questions. For more information see the [Redwoods Public Safety Page](#).

In an emergency that requires an evacuation of the building anywhere in the District:

- Be aware of all marked exits from your area and building
- Once outside, move to the nearest evacuation point outside your building
- Keep streets and walkways clear for emergency vehicles and personnel

Do not leave campus, unless it has been deemed safe by the campus authorities.

### Eureka Campus Emergency Procedures

Please review the [campus emergency map](#) for evacuation sites, including the closest site to this classroom (posted by the exit of each room). For more information on Public Safety go to the [Redwoods Public Safety Page](#). It is the responsibility of College of the Redwoods to protect life and property from the effects of emergencies within its own jurisdiction.

In the event of an emergency:

1. Evaluate the impact the emergency has on your activity/operation and take appropriate action.
2. Dial 911, to notify local agency support such as law enforcement or fire services.
3. Notify Public Safety 707-476-4111 and inform them of the situation, with as much relevant information as possible.
4. Public Safety shall relay threat information, warnings, and alerts through the Everbridge emergency alert system, Public address system, and when possible, updates on the college website, to ensure the school community is notified.
5. Follow established procedures for the specific emergency as outlined in the College of the Redwoods Emergency Procedure Booklet, (evacuation to a safe zone, shelter in place, lockdown, assist others if possible, cooperate with First Responders, etc.).
6. If safe to do so, notify key administrators, departments, and personnel.
7. Do not leave campus, unless it is necessary to preserve life and/or has been deemed safe by the person in command.

## Course Schedule

<i>Day</i>	<i>Theory</i>	<i>Lab</i>	<i>Assigned Reading</i>
1/18	<i>Safety</i>	<i>Overview</i>	<i>None</i>
1/20	<i>Brake Basics</i>	<i>Basic Service</i>	<i>Ch. 2</i>
1/25	<i>Brake Basics</i>	<i>Brake System Inspection</i>	<i>Ch. 2</i>
1/27	<i>Brake Basics</i>	<i>Brake System Inspection</i>	<i>Ch. 2</i>
2/1	<b>TEST I</b>	<b>LAB EVALUATION I</b>	
2/3	<i>Hydraulic Brake Systems</i>	<i>Hydraulic Service</i>	<i>Ch. 3</i>
2/8	<i>Hydraulic Brake Systems</i>	<i>Hydraulic Service</i>	<i>Ch. 3</i>
2/10	<i>Power-Assist Systems</i>	<i>Power Boost Service</i>	<i>Ch. 8</i>
2/15	<i>Lines, Valves and Swtiches</i>	<i>Lines, Valves and Swtiches</i>	
2/17	<i>Lines, Valves and Swtiches</i>	<i>Lines, Valves and Swtiches</i>	
2/22	<b>TEST II</b>	<b>Lab Evaluation II</b>	
2/24	<i>Parking Brakes</i>	<i>Parking Brake Service</i>	<i>Ch. 7</i>
3/1	<i>Parking Brakes</i>	<i>Parking Brake Service</i>	<i>Ch. 7</i>
3/3	<i>Drum Brakes</i>	<i>Drum Brake Service</i>	<i>Ch. 5</i>
3/8	<i>Drum Brakes</i>	<i>Drum Brake Service</i>	<i>Ch. 5</i>
3/10	<i>Drum Brakes</i>	<i>Drum Brake Service</i>	<i>Ch. 6</i>
3/15	<b>No Class</b>	<b>Spring Break</b>	
3/17	<b>No Class</b>	<b>Spring Break</b>	
3/22	<b>TEST III</b>	<b>Lab Evaluation 3</b>	
3/24	<i>Disc Brakes</i>	<i>Disc Brake Service</i>	<i>Ch. 4</i>
3/29	<i>Disc Brakes</i>	<i>Disc Brake Service</i>	<i>Ch. 4</i>
3/31	<i>Disc Brakes</i>	<i>Disc Brake Service</i>	<i>Ch. 6</i>
4/5	<b>TEST IV</b>	<b>Lab Evaluation 4</b>	
4/7	<i>ABS Systems</i>	<i>ABS Service</i>	<i>Ch. 11</i>
4/12	<i>ABS Systems</i>	<i>ABS Service</i>	<i>Ch. 11</i>
4/14	<i>ESC Systems</i>	<i>ESC Service</i>	<i>Ch. 12</i>
4/19	<b>Final Review</b>	<b>Final Lab Review</b>	
4/21	<b>Lab Finals</b>	<b>7:00AM – 1230PM</b>	
4/26	<b>Lab Finals</b>	<b>7:00AM – 1230PM</b>	
4/28	<b>Lab Finals</b>	<b>7:00AM – 1230PM</b>	
5/3	<b>Lab Finals</b>	<b>7:00AM – 1230PM</b>	
5/5	<b>Lab Finals</b>	<b>7:00AM – 1230PM</b>	
5/10	<b>Final Exam</b>	<b>8:30AM – 10:30AM</b>	