



**DEPARTMENT OF AUTOMOTIVE AND PARTS
COURSE OUTLINE – WINTER 2011 SEMESTER B**

JANUARY 3 – MAY 4, 2012

**HA 293 HEAVY DUTY AIR AND HYDRAULIC BRAKE SYSTEMS
– 4 CREDITS 60 HOURS**

INSTRUCTOR: Rob Young **PHONE:** 780.835.6730
OFFICE: FTI 225 **E-MAIL:** RYoung2@GPRC.ab.ca

OFFICE Monday through Friday.
HOURS: 8:00 – 8:30 a.m. and 4:00 – 5:00 p.m.

PREREQUISITE(S)/COREQUISITE: None.

REQUIRED TEXT/RESOURCE MATERIALS:

Alberta Apprenticeship and Industry Training Individual Learning Modules*:

- 190103 d Hydraulic Brake Booster System Fundamentals and Service
- 190103 e Parking Brake System Fundamentals and Service
- 190103 f Electric Brake Fundamentals and Service
- 190106 a Air Brake System Fundamentals
- 190106 b Air Brake System Mechanical Components
- 190106 c A Truck/Tractor Air Brake System Components - Part A
- 190106 c B Truck/Tractor Air Brake System Components - Part B
- 190106 d Trailer Air Brake System Components
- 190106 e Air Brake System Testing and Service
- 190106 f Air Antilock Brake System Fundamentals
- 190102e Trailer Systems and Components

*Part of the AIT General Mechanics Module Package.

CALENDAR DESCRIPTION: This theory course prepares students to understand the operation, diagnosis and repair of typical heavy truck and equipment air and hydraulic brake systems. Vacuum and hydraulic brake boosters and air anti-lock brake systems operation, diagnosis and repair are included. An opportunity to challenge the “Q” endorsement is available to the students.

Delivery Option – Fairview Campus Only

CREDIT/CONTACT HOURS: 4 credits; 15 hours per week; 4 weeks; 60 hours.

DELIVERY MODE(S): Instructor led; lecture, demonstrations.

OBJECTIVES:

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

1. Identify and explain operation of common brake boosters.
2. Describe the diagnosis and repair procedure for common brake boosters.
3. Explain the principles of operation for common parking brake systems.
4. Describe the adjusting and repair procedure for common parking brake systems.
5. Explain the principles of operation of electric brake systems.
6. Explain the principles of operation of a typical air brake system.
7. Explain the operating principles of a typical drum or disc foundation brake.
8. Explain the functions and operation of air brake supply, primary, secondary, parking/emergency, and trailer control circuit components.
9. Explain the function and operation of pre-CMVSS 121 and CMVSS 121 trailer brake systems.
10. Describe multiple trailer brake control systems.
11. Explain operation and advantages of the air ABS system.
12. Describe antilock air brake service procedures.
13. Identify and describe various trailer configurations.

TRANSFERABILITY: None.

GRADING CRITERIA: Students must complete all required courses with a grade point average of no less than 2.00 and no failing (F) grades. Course pass mark is 65%.

GRANDE PRAIRIE REGIONAL COLLEGE			
GRADING CONVERSION CHART			
Alpha Grade	4-point Equivalent	Percentage Guidelines	Designation
A⁺	4.0	90 – 100	EXCELLENT
A	4.0	85 – 89	
A⁻	3.7	80 – 84	FIRST CLASS STANDING
B⁺	3.3	77 – 79	
B	3.0	73 – 76	GOOD
B⁻	2.7	70 – 72	
C⁺	2.3	67 – 69	SATISFACTORY
C	2.0	65 – 66	
F	0.0	60 – 64	FAIL
F	0.0	55 – 59	
F	0.0	50 – 54	
F	0.0	0 – 49	
WF	0.0	0	FAIL, withdrawal after the deadline

EXAMINATIONS: Multiple choice tests 80%; assignments/quizzes 20%.

STUDENT RESPONSIBILITIES:

Please refer to the Student Rights and Responsibilities policy in the Grande Prairie Regional College Calendar or at

www.gprc.ab.ca/downloads/documents/StudentRightsandResponsibilities.pdf.

STATEMENT ON PLAGIARISM AND CHEATING:

Please refer to

www.gprc.ab.ca/downloads/documents/Student%20Misconduct%20Plagiarism%20and%20Cheating.pdf regarding plagiarism, cheating and the resultant penalties. These are serious issues and will be dealt with severely.

COURSE SCHEDULE/TENTATIVE TIMELINE: Semester B.