Class Syllabus

Basic Hydraulics Fall 2019

CT/Hv3,134 ATH-104 **Instructor** John Alvin (541)917-4613

07:00 am-10:50 alvinjo@linnbenton.edu
Sep30-Oct 31 Office hours 1-2 M-Th

Be prepared to be spoken to frankly:

Text required: CDX Medium and Heavy vehicles/CDX Engines book active license
Additional text required Goodheart and wilcox Hydraulics book
Required Materials: Laptop or tablet 8x11" capable of CDX, Service Advisor and Parts advisor.

Safety: The safety of our students is our primary concern at LBCC adherence to safety and conduct policies are rigorously enforced.

NIOSH Z-87 approved eye protection is required at all times in the lab.

Closed toed work shoes are required.

Clothing shall be properly fitted and worn correctly.

Jewelry should not be worn while working.

Tie up long hair securely, and/or tuck it into a cap.

Hearing protection required when sound levels exceed OSHA threshold limits (running

engines, air tools, and power tools, etc.)

Report all injuries to your instructor immediately.

Proper safety stands are required when working under lifted equipment.

Front and rear ground guides are required when moving equipment into and out of the shop.

Uniform: Sponsorship shirt/program uniform shirt in class room and coveralls in the shop. No coveralls in the classroom.

No student will be admitted to class after week 1 not wearing an approved Diesel Department uniform. This will result in a forfeiture of daily professional grades.
Uniform will consist of:

Clean sponsorship **uniform shirt**, or Clean Snap-On uniform shirt
Clean preferably dark denim **work pants**
OSHA Approved **Safety glasses** (worn in the lab at all times)
Preferably dark **Leather shoes**
Notepad 1 pen and pencil. Small working flashlight
OSHA Approved ear muffs to be worn during high noise conditions.

Coveralls Clean and maintained coveralls worn in the shop during all lab activities.
Students will not participate in lab activities without proper uniform and will be removed from lab till proper uniform is met. (Forfeiture of professionalism grade will result.

Course description

This course covers basic hydraulic theory and formulas. It introduces student to pumps, motors cylinders and other actuators. Student will be exposed to the function and application of pressure, directional control and flow control valves. Student will also be introduced to hydraulic symbology and the reading of schematics to become proficient hydraulic system troubleshooters.

Course learning outcomes

1. *Operate* hydraulic equipment safely
2. *Troubleshoot* hydraulic systems
3. *Repair* hydraulic systems
4. *Interpret* hydraulics schematics and diagrams

Assessments of Student Learning Outcomes Assessment:
Written test questions, hands-on evaluations, and lab projects

Grading System

Student progress may be discussed at any point during the quarter. Grade definitions are outlined in the general catalog.
A - 90%-100%
B - 80%-89%
C - 70%-79%
D - 60%-69%
F - Below 60%
IN - Available with student initiated grade contract
AU - Audit classes do not apply to certificate or degree

W - Student must select this grade prior to the end of the second week of class for a full refund.

The purpose of the daily professional grade is to help students unfamiliar with the culture of the employment setting make the personal adjustments adjustments to be able to work within an organization.

DAILY PROFESSIONAL GRADE 30%
This grade is a compilation of key points as they relate to student professionalism.
These key points are as follows:

Punctuality Attitude Uniform Character Honesty

Integrity Craftsmanship Cleanliness Organization

Neatness and legibility of paperwork

Respect of peers Respect of authority Respect of property

Student Final Grade: Determined by the following breakdown:

DAILY PROFESSIONAL GRADE	30%
Lab Projects	30%
Quizzes / Homework / Tests	20%
Mid Term Exam/ Final Exam	20%

Shop clean-up is the responsibility of all students in this class.

Shop cleanup will start 20 minutes before the end of class.

Any work area that is left in unsatisfactory condition at the end of lab, must be cleaned by students responsible, and approved by the instructor or **Instructional assistant** before students will be allowed to continue with any lab projects. Failure to comply with clean up protocol results in forfeiture of Daily Professional Grade.

Shop cleanup will include: Failure to comply with cleanup will result in a demerit and deduction of professional grade.

Any trash put in trash cans
Hoses and cords properly stored
All the shop's and specialty tools put away
Student tool boxes returned to proper area and tools maintained.
Floor swept and oil pads picked up and disposed of.
Any fluid spills must be cleaned up immediately

Tool Policy:

- Students are responsible for the use, care, maintenance, and inspection of tools in their custody.
- Students are responsible for their assigned toolbox and its contents. Missing tools will be replaced at the responsible student's expense
- Tools will be cleaned, returned to their storage location(s), and checked in at the end of class
- Student will not use hand tools that are not from their assigned box. (no borrowing of tools from one group to another)

The Heavy Equipment/Diesel Department Absences Policy

Absences Policy: Eight undocumented class absences during the 11 week term shall result in an automatic course grade of "F" for material nonparticipation.

Four undocumented class absences during the 5 week term/Class shall result in an automatic course grade of "F" for material nonparticipation.

Only absences covered through the Center for Accessibility Resources documentation, or DOCUMENTED emergency absences (for yourself only) will be excused. Job conflicts, oversleeping, car trouble, travel delays, traffic jams, and other such minor life events are not considered emergencies.

Documentation must be physically handed to the instructor within five (5) business days (Monday through Friday) of the absence for it to be excused.

For further information see also:
7000 Series Administrative Rules - Student Affairs

ADA/CFAR statements

You should meet with your instructor during the first week of class if:

1. You have a documented disability and need accommodations.
2. Your instructor needs to know medical information about you.
3. You need special arrangements in the event of an emergency.

If you have documented your disability, remember that you must make your request for accommodations through the Center for Accessibility Resources (CFAR) Online Services webpage https://cascade.accessiblelearning.com/LBCC/ every term in order to receive accommodations. If you believe you may need accommodations but are not yet registered with CFAR, please visit the CFAR Website https://www.linnbenton.edu/cfar for steps on how to apply for services or call (541) 917-4789.

NON-DISCRIMINATION POLICY

LBCC maintains a policy of nondiscrimination and equal opportunity in employment and admissions, without regard to race, color, sex, marital and/or parental status religion, national origin, age, mental or physical disability, Vietnam era, or veteran status.

Basic needs statement:

Any student who has difficulty affording groceries or accessing sufficient food to eat every day, or who lacks a safe and stable place to live, and believes this may affect their performance in the course, is urged to contact the Roadrunner Resource Center for support (resources@linnbenton.edu , or visit us on the web www.linnbenton.edu/RRC under Student Support for Current Students). Our office can help students get connected to resources to help. Furthermore, please notify the professor if you are comfortable in doing so. This will enable them to provide any resources that they may possess.

Course Content

- Introduction to Pascal's Law
- Physical properties of incompressible fluids
- Fluid power transmission
- Horsepower
- Energy conversion
- Pressure calculations
- Absolute pressure and atmospheric pressure
- Column pressure for fluids
- Pressure drop through an orifice
- Bernoulli’s principle
- Pressure and area calculations
- Hydraulic Safety practices
- Hoses tubes connectors
- Specifications including burst pressure limits
- Hydraulic pumps
- Check valves,
- Pressure regulating valves,
- Directional valves, proportional valves
- Hydraulic actuators
- Reservoirs
- Accumulators
- Hydraulic motors
- Ram cylinders
- Single and double acting hydraulic cylinders
- Balanced and differential hydraulic cylinders
- Schematics and system design
- Troubleshooting practices for fluid power systems

A note to second year students in Fall of 19.

You have entered a career path that will be rewarding both monetary and in a sense of accomplishment. This is in your grasp but it will not be given without effort. It is an honorable career one to take great pride in. You will be by retirement as well trained and educated as any college president, or doctor.

You will earn a living wage and always be in demand. As we embark on this new year I can not emphasize how much you and your decisions will affect your future. Any true success comes at the cost of effort. That is why we admire the athlete that excels above others. Success starts with a proper life balance and making good decisions.

Basic and advanced Hydraulics homework 2019 CT/Hv3.132 and 134

Text: Good Heart Willcox Hydraulic systems for mobile equipment by timothy Dell
Isbn# 978-1-163126-414-6

WEEK 1 CT/HV3.134
Chapters: 1(Safety) and 2 (Hydraulic Principles)
Do all even questions for all chapters

WEEK 2
Chapters: 3(symbols), 4(Pumps), and 14 (Reservoirs)
Do all even questions for all chapters

WEEK 3
Chapters: 5 (Rotary actuators) and 6 (Cylinders)
Do all even questions for all chapters

WEEK 4
Chapters: 8(flow controls) , 9(directional valves) and 10(fluids)
Do all even questions for all chapters

WEEK 5 CT/HV3.132
Chapters: 7(pressure valves) ,11(Filtration) and 16 (Open center Hydraulics)
Do all even questions for all chapters
Final

WEEK 1- 6

Chapters: 12,(Contamination control) 13(Accumulators) and 17 (Pressure compensating)
Do all even questions for all chapters

WEEK 2-7
Chapters: 15(Plumbing) ,18(Load sensing) and 19(Flow sharing)
Do all even questions for all chapters

WEEK 3-8
Chapters: 20(Excavator pump controls ,21(Test equipment)
Do all even questions for all chapters

WEEK 4-9
Chapters: 23(Hydrostatic drives , and 22(troubleshooting)
Do all even questions for all chapters

WEEK 5-10
Chapters: 24(Hydrostatic drive service) and 25 (Hydraulic steering)

Do all even questions for all chapters

WEEK 6- 11

Final

I have read this document and understand its content.
By signing this document I agree to and agree to abide by its policies.

Signature_____ Date _____