

NorthCentral

MISSOURI COLLEGE

SYLLABUS BASIC FLUID POWER Fall Semester 2015 (2nd Half)

Course Number: MF145

Instructor Information:

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Office Hours: 2nd Half: M,W 2:00-4:00PM; T,Th,F 1:00-4:00PM

*Faculty will respond to email/phone messages within 48 hours Monday-Friday. All email correspondence is through NCMC student email.

Course Description:

This course is an extensive hands-on study of basic hydraulic and pneumatic power control systems. The course covers fluid power symbols and drawings, operating theory, components and common controls.

Prerequisites: None

Credit Hours: 3 Hrs.

Textbook and /or Supplementary Materials:

1. "Basic Hydraulics LAP 1: Hydraulic Power Systems", BB831-XA01XEN
2. "Basic Hydraulics LAP 2: Basic Hydraulic Circuits", BB831-XA02XEN
3. "Basic Hydraulics LAP 3: Principles of Hydraulic Pressure and Flow", BB831-XA03XEN
4. "Basic Hydraulics LAP 4: Hydraulic Speed Control", BB831-XA04XEN
5. "Basic Hydraulics LAP 5: Pressure Control Circuits", BB831-XA05XEN
6. Basic Hydraulics, ISBN: HB831

Student Learning Objectives:

Student Learning Objective	Assessment Method
Upon successful completion of this course the student will be able to:	Describe the assessment tool/s used to demonstrate each student learning outcome.

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1. demonstrate knowledge of fluid power symbols and prints.	Completion of online module exercise, online module quizzes, hands-on training module learning activities and course Final Exam.
2. define and demonstrate pressure, volume and flow.	Completion of online module exercise, online module quizzes, hands-on training module learning activities and course Final Exam.
3. demonstrate and calculate hydraulic cylinder force and speed.	Completion of online module exercise, online module quizzes, hands-on training module learning activities and course Final Exam.
4. explain and demonstrate use of common hydraulic circuit control components.	Completion of online module exercise, online module quizzes, hands-on training module learning activities and course Final Exam.
5. describe and demonstrate hydraulic sequencing.	Completion of online module exercise, online module quizzes, hands-on training module learning activities and course Final Exam.

Course Outline/Major Topics Studied:

I. Introduction

- A. Define hydraulics and give applications
- B. Describe the basic components of a hydraulic system
- C. Describe the importance of the hydraulic print and its various symbols

II. Basic Concepts

- A. Define flow generation
- B. Discuss flow versus pressure
- C. Discuss fluid friction
- D. Demonstrate power and work

III. System Operation

- A. Describe various pumps and their applications
- B. Discuss functions of electric motors
- C. Discuss the reservoir, its component parts, and their importance
- D. Describe hydraulic actuators and applications
- E. Describe directional control valves and circuit applications
- F. Describe relief valves and their importance
- G. Describe check valves and their uses in circuit applications
- H. Discuss flow control valves and circuits
- I. Discuss cylinder synchronization and sequence circuits
- J. Discuss pressure reducing valves and circuits and their applications
- K. Describe various hydraulic braking circuits and applications

IV. Pneumatics

- A. Describe how the various circuits and components vary when used in a pneumatic application

Instructional Methods and Techniques:

1. lecture
4. individual/group work

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2. class discussion
3. small group work

5. guest speakers from profession

Course Requirements:

- Online Module Quizzes (30%) – One retake allowed
- Unit Tests (30%)
- Participation/attendance (10%)
- Final (30%)

Grading Scale:

- A = 90-100%**
- B = 80-89.9%**
- C = 70-79.9%**
- D = 60-69.9%**
- F = Below 60%**

Attendance and Class Participation:

Absences reduce the value of the learning experience and reduce the probability of passing the course as research indicates successful college students attend class regularly. NCMC strongly encourages students to attend classes on a regular basis as registration for any NCMC course presupposes that the student will attend all scheduled classes, laboratories, and clinicals. **Failure to attend class does not constitute an official standard withdrawal.** Students are responsible for withdrawing from classes.

After the published Add/Drop date, students are financially responsible for costs associated with classes from which they have withdrawn. Students are also financially responsible for the course under the Administrative Drop Policy.

Administrative Drop Policy:

- In an on-ground class, if a student fails to attend during the first two weeks of the semester, an administrative drop will occur.
- In an online class, if a student does not complete at least one substantive activity (defined by the instructor) during the first two weeks of the semester, an administrative drop will occur. The faculty member will attempt to contact the student after the initial week of non-attendance and remind the student of the importance of remaining engaged in the course for success. Consequences of continually non-engagement during the first two weeks will result in the student being administratively dropped from the course.
- Under these circumstances, students are financially responsible for 50% of tuition and course fees associated with classes from which they have been administratively dropped.

Attendance for the class is very important. Any planned absence should be made known to the instructor prior to the absence. The student is still responsible for completing all work by the due date if absent.

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Additional Information:

Students enrolled in this course are expected to:

- attend class
- be on time
- participate in class discussions
- read assigned text/materials
- complete written assignments/projects
- act in a professional and respectful manner

Academic Misconduct

Academic integrity is expected and required of all NCMC students. Students and faculty are responsible and accountable for personally upholding that integrity. Each instructor is assigned jurisdiction for class conduct and grades. Cheating will not be tolerated, and students found guilty of cheating in any way will be disciplined according to the following policy.

Cheating Offenses

Cheating offenses include, but are not limited to, the following:

- Copying from another student in an examination situation.
- Using unauthorized material or aids in the preparation of an assignment, paper or project.
- Possessing unauthorized material or aids in an examination situation.
- Allowing another person to take an examination in one's place.
- Altering or falsifying academic records in any way.
- Submitting false medical, academic or other documentation required by the college.
- Improperly obtaining an examination prior to the examination.
- Aiding or abetting anyone in a cheating offense.
- Plagiarizing materials or works, in whole or in part, prepared by another person without citing appropriate reference credit.
- Copying and submitting, in whole or in part, the work of another in an assignment, report, paper, project, etc. as one's own.
- Claiming to have completed assigned tasks that were, in fact, completed by another person.
- Failing to accurately document information, wording, or visual images obtained on the World Wide Web.
- Violating federal copyright laws including unauthorized duplication of copyrighted materials.

Procedure

1. When a student is suspected of cheating, the instructor or other individual who suspects the student of cheating will, at the earliest opportunity, investigate the situation, discuss the matter with the student and come to a decision regarding the student's innocence.
2. In the event a decision is made that the student is responsible of cheating, before determining an appropriate penalty, the course instructor will ascertain from the Dean of Instruction whether

the student has been found responsible of any previous cheating offense while enrolled at North Central Missouri College.

3. In the event that the instructor determines this to be a first offense for the student, the instructor will apply an appropriate penalty. The instructor should give due consideration to the seriousness of the offense as well as the impact of the penalty imposed on the student's education. The penalty should also be consistent with the range of penalties outlined in this policy.

4. The instructor will inform the Dean of Instruction of the cheating offense and the penalty applied.

5. In the case of a second offense by the student, the Dean of Instruction will determine the appropriate penalty for this offense and will ensure that the penalty is more severe than the penalty imposed for the previous offense. The student will be advised that if found responsible of a third offense of academic dishonesty at North Central Missouri College, the penalty of expulsion from the College could result.

Penalties

A student responsible of cheating will be subject to a penalty appropriate to the nature and seriousness of the offense.

A record of all such cases will be kept in the office of the Dean of Instruction. Second offenses for the same individual will be subject to a more serious penalty than the one previously imposed.

The following penalties may be applied:

- Reprimand.
- Requirement that the student repeats and re-submits the same or alternate assignment. In such cases, the grade or mark awarded will be reduced or limited at the discretion of the faculty member.
- A mark of "0" will be given for the assignment with no opportunity to resubmit. This may result in failure of the course.
- A failing (F) grade will be awarded in the course.
- Automatic failing (F) grades in all courses in which the student is registered, and no tuition or fees will be refunded for that semester. This penalty will only be imposed by the Dean of Instruction.

Expulsion from North Central Missouri College, permanently recorded on the student's record. This penalty will result in automatic failing (F) grades in all courses in which the student is registered, and no fees will be refunded for that semester.

Special Accommodations:

North Central Missouri College complies with Section 504 of the Rehabilitation Act of 1973 and the American with Disabilities Act of 1990. Students with documented disabilities who need special classroom accommodations must make their requests in writing to: Disability Support Services, Alexander Student Center, 1301 Main Street, Trenton, MO 64683 or call 660-359-3948, ext. 1405 for an appointment. Services provided can be found at:

http://www.ncmissouri.edu/services/disability_services/default.aspx

If you have been approved for an accommodation, if you have emergency medical information to share with me, or if you need special arrangements in case the building must be evacuated, please inform me immediately.

Early Alert:

Success in this course is important. When the instructor believes that a referral to the Early Alert Program will help a student academically, information will be sent to appropriate college personnel. As a result, the student may be contacted by other faculty/staff in order to develop an intervention that will help in achieving educational goals. Please take advantage of these and other resources while at NCMC.

Communications:

Students are required to use their NCMC student email account for any correspondence within the college. Students are also highly advised to check their email and SAIL accounts on a regular basis.

Finals:

If an emergency occurs that prevents the administration of a final examination, the student's final course grade will be calculated based on the work in the course completed to that point in time and the faculty member's considered judgment. Final exams will not be rescheduled, and a grade of "I" will not be given as a result of the missed exam. This Finals policy does NOT apply to online courses.

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