SAN JUAN COLLEGE
Success Matters

MECH-2680 HYDRAULICS 4 CREDITS

SYLLABUS

CATALOG DESCRIPTION

This course teaches fundamentals of hydraulic systems used in industry mobile applications. Students learn industry-relevant skills including how to operate, install, analyze performance, and design basic hydraulic systems.

Prerequisites: MECH 2630

Semester Offered: Spring

GENERAL EDUCATION STUDENT LEARNING OUTCOMES

In the New Mexico General Education Curriculum students take courses in a variety of content areas, which may include Communications, Mathematics, Science, Social and Behavioral Sciences, Humanities, and the Creative and Fine Arts. Specific course requirements depend on your program. All general education courses focus on at least three of these skills. Other courses may also develop these skills.

Through these courses, students develop five essential skills:

COMMUNICATION

QUANTITATIVE REASONING

CRITICAL THINKING

PERSONAL AND SOCIAL RESPONSIBILITY

INFORMATION AND DIGITAL LITERACY

Student work from this class may be randomly selected and used anonymously for assessment of course, program, and/or general education learning outcomes. For more information, please refer to the Dean of the appropriate School.

COURSE LEARNING OUTCOMES

Upon successful completion of the course, students will be able to…

1. Students will be introduced to hydraulics and be able to define and give applications of the use of hydraulics.

   Students will describe the functions of common hydraulic systems and be able to identify components on the hydraulic trainer.

   Students will learn and be able to demonstrate proficiency in operation of hydraulic power unit.

   Students will learn and be able to demonstrate the use of various hydraulic connections and fittings.

   Students will learn and be able demonstrate the functions of hydraulic cylinders and be able to recognize the schematic symbol for cylinders, single and double acting.

   Students will learn and be able to demonstrate the correct use and connection of cylinders and directional control valves.

   Students will be able to define flow rates and measurement of flow.

   Students will be able to identify various types of flow meters and fixed displacement pumps used in hydraulic systems.

   Students will be able to describe functions and demonstrate use of various hydraulic components to include needle valve, hydraulic motors.

   Students will be able to draw and interpret hydraulic schematics.

2. Students will learn and put into practice force and pressure calculations relating to hydraulics.

   Students will learn "Pascal's Law" and be able to explain it in relation to hydraulics.

   Students will learn about fluid resistance with in a hydraulic system and be able to measure Delta P across hydraulic system components.

   Students will become familiar with methods of pressure measurement and be able to convert between "absolute" and "gauge" pressures.

   Students will learn operation, applications and install various valves into hydraulic systems to include: Relief valves, check valves, flow control valves, sequencing valves, and pressure reducing valves. Student will learn and put into practice how these devices are used to control pressure, flow and speed of hydraulic system.

3. Students will learn and describe the operation and functions of various DCVs and be able to specify application characteristics.

   Students will learn and be able to describe function, operation and application of 2-position DCVs, Pilot operated DCVs, and Cam operated DCVs.

   Students will learn and cover various types of cylinders, pressure compensated flow control valves, regeneration circuits and synchronization circuits

A copy of this approved syllabus is on file in the dean's office.
Updated 12/14/18