DEPARTMENT OF POWER ENGINEERING

COURSE OUTLINE – FALL 2014

POF 401 POWER ENGINEERING, FOURTH CLASS PART A1 (PE4A1) – 7.5(12/0/2)154

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OFFICE HOURS:	As Posted		

PREREQUISITE(S)/COREQUISITE:

A high school diploma including at least:

- 65% in English 20-1 or 20 -2, AND
- 65% in Math 20-1 or 20-2, AND
- 65% in any Science (Physics, Chemistry, Biology or Science) in the 20 stream, AND
- A Career Investigation (specified format)

OR

- Mature students not meeting the above requirements may request a review of their education and prior work skills by the Power Engineering Team at GPRC.

REQUIRED PPE/RESOURCE MATERIALS:

- PE4A1 Learning Materials (PanGlobal)
- PE4A1 PanGlobal Workbook
- ASME 2007 Academic Extract
- CSA Academic Extract
- SOPEEC approved Academic supplement
- Alberta Safety Codes Act and relevant regulations
    - Power Engineers Regulation AR 85/2003
    - Pressure Equipment Safety Regulation AR 49/2006
    - Pressure Welders Regulation AR 169/2002
    - Pressure Equipment Exemption Order AR 56/2006

CALENDAR DESCRIPTION:
This course along with the other 4th class courses will prepare the student to write the ABSA/SOPEEC Interprovincial examinations. The first book will cover the science portion of steam and energy, Legislation and codes, Safety and Fire Protection

CREDIT/CONTACT HOURS:
Credits 7.5
Contact Hours 154 (12/0/2) 11 weeks

DELIVERY MODE(S):
Credits 7.5
Contact Hours 154 (12/0/2) 11 weeks

OBJECTIVES (OPTIONAL):

- Describe the overall industrial background and certification system for Power Engineering.
- Perform simple calculations involving SI units.
- Perform basic arithmetic operations without the use of a calculator.
- Perform basic arithmetic operations involving fractions, decimals and percentages.
- Describe the concepts of ratio and proportion.
- Transpose equations in order to find values for different variable in a formula.
- Describe measurement of length, types of lines and angles, and calculate perimeters and areas of simple figures.
- Calculate: the volumes of rectangular objects, cylinders, and spheres; and the surface areas of cylinders and spheres.
- Define basic terms used in the study of mechanics.
- Perform
- calculations using forces and moments, and determine whether or not a system is in equilibrium.
- Define simple machines and perform calculations relating to them.
- Define and identify scalar and vector quantities and solve simple vector problems graphically.
- Define speed, velocity, distance, displacement, and acceleration and solve simple linear problems involving velocity, time, and distance.
- Differentiate among force, work, pressure, power and, energy and perform calculations involving the relationships between these mechanical terms.
- Describe and solve problems involving friction.
- Discuss the deformation of bodies caused by externally applied forces, and the internal forces that resist these deformations; discuss the physical properties of materials and explain how these properties affect their behavior when external forces are applied.
- Discuss the major types of power transmission systems.
- Explain the principles of thermodynamics, including the laws of thermodynamics and the modes of heat transfer.
- Describe the principles of the thermodynamics of steam and the associated terms.

- Discuss the basic types of matter and their properties.
- Make basic engineering sketches of plant equipment.
- Identify correct and effective sentence structures and revise poorly worded sentences for clarity, conciseness, and correctness.
- Write a unified, coherent paragraph using a clear topic sentence, technical terminology and specific support, given a technical topic.
- Plan, write, and edit routine and positive messages in memo format, given a work-related scenario.
- Describe the purpose of codes and Provincial acts and regulations with respect to boilers and pressure vessels.
- Explain the significance of the Workplace Hazardous Materials Information System (WHMIS) and its application to the worksite.
- Discuss the significance of the Workplace Hazardous Materials Information System (WHMIS) and its application to the worksite
- Explain the components of the WHMIS Material Safety Data Sheet, its application in the worksite and the terminology used on the MSDS.
- Describe the cost and effects of workplace injuries on the individual worker and the business.
- Describe the use, selection, and care of personal protective equipment.
- Describe the general procedures involved in the isolation of plant equipment.
- Describe procedures needed to enter into and work safely within confined spaces.
- Describe the procedures for safe and handling of cylinders containing compressed gases.
- Describe the safe procedures for the loading, storage, unloading and transportation of hydrocarbon fluids.
- Discuss hydrogen sulphide (H2S) in terms of its properties, its effects on humans, and its presence in the workplace.
- Identify possible or potential medical difficulties in a person, and provide assistance until professional medical aid can be obtained.
- Describe the fire classifications and the types of extinguishing media suitable for each classification.
- Describe the types of portable fire extinguishers, and their application for each fire classification.
- Discuss the causes of, and preventive measures for electrical fires.

TRANSFERABILITY: As per ABSA Requirements

** Grade of D or D+ may not be acceptable for transfer to other post-secondary institutions. Students are cautioned that it is their responsibility to contact the receiving institutions to ensure transferability.

GRADING CRITERIA:

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
F	0.0	0 – 66	FAIL
WF	0.0	0	FAIL, withdrawal after the deadline

EVALUATIONS:

Method	Percentage	Minimum
Course assignments	10%	67%
CML quizzes	10%	67%
Labs	10%	67%
Unit Exams	30%	67%
Final Exam	40%	67%
	100%	67%
		67% average, with no mark below 50%

STUDENT RESPONSIBILITIES:

*Students must complete all courses with no failing grades and a minimum of 67%, and attend a minimum of 80% of all classes and 100% of labs to successfully complete the program.

STATEMENT ON PLAGIARISM AND CHEATING:

Refer to the Student Conduct section of the College Admission Guide at
http://www.gprc.ab.ca/programs/calendar/ or
the College Policy on Student Misconduct: Plagiarism and Cheating at
www.gprc.ab.ca/about/administration/policies/**
Note: all Academic and Administrative policies are available on the same page. **COURSE

SCHEDULE/TENTATIVE TIMELINE:

First 11 weeks from the start of the course in September.
Tests and exams will be held during the course as Units are completed.