DEPARTMENT OF POWER ENGINEERING

COURSE OUTLINE – SPRING 2014

POF302 POWER ENGINEERING, THIRD CLASS PART A2 (PE3A2) – 5.5(11-0-5)128

INSTRUCTOR:	Houshang Ghazi Augustine Ebinu	**PHONE:**	780.835.6609 780.835.6692
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OFFICE HOURS:	Houshang -as posted Augustine -as Posted		

PREREQUISITE(S)/COREQUISITE:

- Fourth Class Power Engineering Certificate of Qualification (SOPEEC or Jurisdictional)
- A High School Diploma
- English any level 30
- Math 30-1 (Pure) or 65% minimum in Math 30-2 (Applied)
- Any 30-1 level Science or 30-2 with 65% minimum
- Career Investigation Report as per specified format

  Applicants not meeting the above requirements may request a review of their education and prior work skills by contacting the Registrar's office.

REQUIRED TEXT/RESOURCE MATERIALS:

- PE3A2 Learning Materials (PanGlobal)
- PE3A2 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:

Power Engineering Third class Part A2 will cover the topics of Codes and Legislation, combustion, piping and steam traps, electricity and controls, safety and fire protection. This will prepare the student to write the ABSA/SOPEEC exam for Third Class part A2.

CREDIT/CONTACT HOURS:

Credits: 5.5
Contact Hours: 128(11-0-5) 8 weeks

DELIVERY MODE(S):

Lectures and Labs

OBJECTIVES (OPTIONAL):

- Explain the purpose of, general content of, and interaction with the legislation and codes that pertain to the design and operation of boilers and related equipment.
- Using the ASME Code – Section I, and ASME Section II D. Table 1A, calculate the design thickness and pressure of boiler tubes, drums, and piping, and calculate the capacities of pressure relief valves.
- Explain the properties and combustion of common fuels and the analysis of combustion flue gas.
- Discuss the codes, designs, specifications and connections for ferrous and non-metallic piping and explain expansion and support devices common to piping systems.
- Explain the designs and operations of steam trap systems, the causes and prevention of water hammer, and the designs and applications of pipe insulation.
- Describe the designs, configurations and operations of the common valve designs that are used in power and process piping.
- Explain basic concepts in the production of electricity and the design, characteristics and operation of DC generators and motors.
- Explain formation and characteristics of AC power, and describe the design, construction and operating principles of AC generators, motors and transformers.

- Identify the components of typical AC systems and switchgear and discuss safety around electrical systems and equipment.
- Define terms and perform simple calculations involving DC and AC power circuits.
- Explain the operations and components of pneumatic, electronic and digital control loops, and discuss control modes and strategies.
- Explain the operating principles of various instrument devices that are used to measure and control process conditions.
- Explain the general purpose, design, components and operation of distributed and programmable logic control systems.
- Discuss typical legislation and programs that manage safety in the industrial workplace.
- Discuss the classes and extinguishing of fires, and explain systems that are used to detect and extinguish industrial 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**
C	**2.0**	**63 – 66**	**FAIL**
C^-	**1.7**	**60 – 62**	**FAIL**
D^+	**1.3**	**55 – 59**	**FAIL**
D	**1.0**	**50 – 54**	
F	**0.0**	**0 – 49**	**FAIL**
WF	**0.0**	**0**	**FAIL, withdrawal after the deadline**

*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.

EVALUATIONS: As per Power Engineering Student Manual

Method	Percentage	Minimum
Course assignments	15%	50%
CML quizzes	15%	50%
Unit Exams	30%	50%
Final Exam	40%	50%
Overall Grade	100%	67%
		67% average, with no mark below 50%

STUDENT RESPONSIBILITIES:

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:

8 weeks during May and June