DEPARTMENT OF POWER ENGINEERING

COURSE OUTLINE – WINTER 2014

POF312 POWER ENGINEERING, THIRD CLASS PART B2 (PE3B2) – 7.0(25-0-7)160

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
- It is preferred that the applicant has either completed the GPRC course POF 310 Work Experience, OR has obtained sufficient qualifying time as per the Alberta Power Engineer's Regulation.

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:

- PE3B2 Learning Materials (PanGlobal)
- PE3B2 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 B2 will prepare the student to take the ABSA/SOPEEC Third Class Part B2 exam. The material covered will include Steam Turbines, Operation, Auxiliaries and condensers – gas turbine systems and internal combustion engines – Cogenerations systems – Compressors and refrigeration – Heat exchangers and cooling towers – fired heaters and wastewater treatment – plant maintenance and administration.

CREDIT/CONTACT HOURS:

Credits: 7.0
Contact Hours: 160(25-0-7)5 weeks

DELIVERY MODE(S):

Lectures and Labs

OBJECTIVES (OPTIONAL):

- Describe designs, operating principles and major components of steam turbines.
- Describe auxiliary support and control systems for steam turbines and explain start-up and shutdown procedures.
- Explain typical designs, components and operating principles of steam turbine condensers.
- Explain common designs, major components, operating principles, and arrangements for industrial gas turbines.
- Describe the support auxiliaries for a gas turbine and explain common operational, control and maintenance procedures.
- Explain the operating principles, designs, support systems, and operation of industrial internal combustion engines (ICE).
- Explain cogeneration and describe common configurations, components and applications.
- Explaining the classification, design, and operating principles of industrial air and compressors.

- Explain the controls and system auxiliaries for a typical instrument air system and explain startup procedures for air compressors.
- Explain the classification and properties of refrigerants and describe the operating principles and components of compression and absorption systems.
- Explain control and safety devices on a compression refrigeration system and explain procedures and equipment to control oil, non-condensable, moisture, refrigerant, and brine.
- Describe the design, operation, and applications of various types of industrial heat exchangers.
- Describe the design, components, operation, and applications of direct-fired and indirect-fired natural draft process heaters.
- Explain the purpose, designs, processes and control of industrial wastewater treatment.
- Explain typical components of maintenance and administration programs for utilities and process facilities.

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:

5 Weeks, (Week #6 to Week # 10 of the GPRC Semester 2 calendar) February to March