DEPARTMENT OF POWER ENGINEERING

COURSE OUTLINE – FALL 2013

POF311 POWER ENGINEERING, THIRD CLASS PART B1 (PE3B1) – 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.

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REQUIRED TEXT/RESOURCE MATERIALS:

- PE3B1 Learning Materials (PanGlobal)
- PE3B1 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 B1 will prepare the student to take the ABSA/SOPEEC Third Class Part B1 exam. The material covered will include Boilers, types of boilers, construction and design of special boilers, Code requirements for boilers and pressure vessels, combustion of fuels, pumps, water treatment, and high pressure boiler operation. The student will also learn to write long answer essay style exams.

CREDIT/CONTACT HOURS:

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

DELIVERY MODE(S):

Lectures and Labs

OBJECTIVES (OPTIONAL):

- Describe common designs, configurations and circulation patterns for modern bent-tube watertube boilers and steam generators and explain how boilers are related.
- Describe the designs, components, firing methods, and operating considerations for some special boilers used in industry.
- Explain Code requirements, in general terms, and describe construction and assembly methods for the major components of a large boiler.
- Explain the purpose, location, design and operating conditions for the major heat transfer components of a large watertube boiler or steam generator.
- Describe the design and operation of common external and internal fittings attached to the pressure side of a high-pressure boiler.
- Describe the typical components of fuel supply systems and describe common burner/furnace designs for gas, oil, and coal-fired boilers.
- Explain boiler draft systems and fans and describe the equipment used to remove ash from flue gas.
- Explain the components and operations of automatic control systems for boiler water level, combustion, steam temperature, and start-up.
- Describe common procedures in the operation and maintenance of high pressure boilers.
- Discuss internal water treatment methods and systems for the control of scale, corrosion, and carryover and explain testing and monitoring strategies.
- Explain the purpose, principles, equipment, and monitoring of boiler water pretreatment processes.
- Describe the designs, principles, components and operating procedures for common industrial pumps.
- Define terms associated with pumping and perform pump head calculations.
- Explain the processes and applications of different welding techniques and describes the testing of welds and procedures.
- Explain pressure vessel designs, stresses, and operating considerations.

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, January to February