DEPARTMENT OF POWER ENGINEERING
COURSE OUTLINE –POF 406 FALL 2017
POWER ENGINEERING, FOURTH CLASS PART B1 (PE4B1) – 6.0(25/0/0)108

INSTRUCTOR:	Jerry Chik Raj Parashar	**PHONE:**	780-835-6720 780-835-6676
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OFFICE HOURS:	As Posted		

PREREQUISITE(S)/COREQUISITE:

A high school diploma including at least:

- 70% in English 30, AND
- 70% in Math 30-2 or 65 % Math 30-1, AND
- 70% in Physics 30 or Chemistry 30, 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 TEXT/RESOURCE MATERIALS:

- PE4B1 Learning Materials (PanGlobal)
- PE4B1 PanGlobal Workbook
- ASME 2007 Academic Extract
- CSA Academic Extract
- SOPEEC approved Academic supplement

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 in Part B will cover Prime movers, pumps/compressors, lubrication, Electricity, controls, hating boilers and heating systems.

CREDIT/CONTACT HOURS:

Credits 6.0
Contact Hours 108 (25/0/0) 5 weeks

DELIVERY MODE(S):

Lectures and Labs

OBJECTIVES (OPTIONAL):

- Discuss the terms used in describing the conversation of heat into mechanical energy and to describe one such device for accomplishing this, the simple steam engine.
- Describe the construction and operation of steam turbines.
- Describe the operation and maintenance of cooling towers.
- Describe the construction and operation of a simple gas turbine.
- Describe the application, construction, and operation of internal combustion engines.
- Describe the design and operating principles of various types of pumps used in buildings and industrial plants.
- Describe the major considerations and procedures for pump operations and maintenance.
- Describe the operating principles of the different types of air compressors.
- Describe the importance of lubrication and the principles concerned with lubrication.
- Describe the methods for simple care and maintenance of bearings and their related lubrication systems.
- Describe the concepts of basic electricity and perform simple calculations using voltage, current, resistance and power.
- Describe the basic principles of magnetism.
- Discuss the designs and uses of electrical metering devices.
- Describe the operating principles of the various types of AC and DC motors or generators.
- Describe the operating principles of transformers.
- Describe an electrical distribution system.
- Describe the overall purpose and function of plant instrumentation systems.
- Describe the construction and operation of common devices used to measure pressure, level, temperature, flow, and composition.
- Describe the basic types and functions of transmitters, recorders, controllers, and control valves.
- Describe specific types of instrumentation and controls used on boilers.
- Describe the operations of programming controls for boilers an discuss testing and maintenance procedures for these controls.
- Describe the major components of process computers, their basic functions and the types of tasks performed by the computer systems.
- Describe cast-iron boilers and explain their uses.
- Describe the various oil burners used on heating boilers.
- Describe the operation of the various types of gas burners used on heating boilers.
- Describe and explain the operating principles of pressure gauges and safety valves found on low-pressure steam boilers.

- Describe the purpose and operating principles of basic boiler fittings on hot water boilers.
- Describe the specific safe and efficient operational procedures that relate to automatically-fired, low-pressure hot water and steam heating boilers.
- Describe the components and operating principles of steam heating equipment.
- Describe the operating principles and maintenance procedures of steam heating systems and the components of these systems.
- Describe the various designs of hot water heating systems.
- Describe accessories, operation and troubleshooting of a hot water heating system.
- Describe the operating principles of warm air heating systems.
- Describe the components and maintenance requirements of typical warm air heating and ventilating systems.
- Describe the various ventilation systems found in buildings, as well as describe the various types of air filters used in these systems.
- Describe infrared and electrical heating systems.

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:
November 13 – December 15, 2017 for 5 weeks.
Tests and exams will be held during the course as Units are completed