DEPARTMENT OF POWER ENGINEERING
COURSE OUTLINE – FALL 2016
POF 403 PE4A POWER LAB –1.0(0/0/4/)44

INSTRUCTOR:	Ron Dennis	**PHONE:**	780-835-6646
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OFFICE HOURS:	As Posted		

REQUIRED TEXT/RESOURCE MATERIALS:
- PE4A2 Learning Materials (PanGlobal)

PREREQUISITE(S)/COREQUISITE:

REQUIRED TEXT/RESOURCE MATERIALS:
 Clipboard
 CSA class 3 steel toe boots
 Flame resistant coveralls
 Gloves
 Safety glasses

CALENDAR DESCRIPTION:
This is an introduction to power plant and heating plant layout and equipment. Students learn to start up and shut down boilers, test and maintain boiler water quality, and open/dismantle, and inspect plant equipment. Plant tours will also be included in this course.

CREDIT/CONTACT HOURS:
Credits 1.0
Contact Hours 44 (0/0/4) 11 weeks

DELIVERY MODE(S): Labs

OBJECTIVES (OPTIONAL):
Power Lab
 Discuss the importance of safety in the Power Lab and Chemistry Lab
 Discuss the parts of the Firetube boiler, prestart up checks, start up sequence, and shut down sequence
 Demonstrate the prestart checks and start up procedures for the Firetube boiler

 Discuss the parts of the water tube boiler, prestart up checks, start up sequence, and shut down sequence

 Demonstrate the prestart up checks and start up procedures for the Watertube boiler

 Discuss the safety loops for the burner management systems.

 Demonstrate how to check each safety device

 Discuss proper water treatment for high pressure boilers. Demonstrate water tests using the drop method, titration method and electronic methods. Discuss how to calculate addition of chemicals to the boiler water and systems

 Demonstrate how to thread steel pipe using hand threaders and machine threaders. Practice threading by piping in a steam trap station

 Tour the campus building heating systems

 Tour Industrial plants, Pulp and Paper, High pressure heating, hog fuelled Power Producer, High Pressure steam Gas Plant, High Pressure steam insitu oil recovery plant

Auxiliary Power Lab

- Water treatment
    - Composition of water
        - Test different sources of water
- Drip method of water tests
    - SO3
    - Molybdate
    - Hardness
    - pH
    - P M and OH alkalinity
- Electronic methods
    - pH
    - TDS
    - Hach meters (2800 and ???)
- Gage Glass cutting lab
    - Demonstrate different methods of cutting glass tubing
    - Measure and cut a gage glass
    - Install a gage glass
- Valve inspection and packing
- Steam trap inspection and disassembly/reassembly

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
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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 labs and assignments with no failing grades and a minimum of 67%, and attend 100% of all classes and labs to successfully complete this course. Other requirements as per Power Engineering Student Manual.

Method	Percentage	Minimum
Safety	10	
Boiler start up procedures FT	10	
Boiler operation WT	10	
Tours	10	
Gage glass	10	
Water testing	10	
BMS safety loop checks	10	
Piping Steam Trap Station	10	
Valve and steam trap identification	10	
Operation of Lab heating system	10	
Overall Grade	100%	67%

EVALUATIONS: As per Power Engineering Student Manual