DEPARTMENT OF POWER ENGINEERING

COURSE OUTLINE – FALL 2011

POF 410 - CHEMISTRY

INSTRUCTOR: Augustine Ebinu **PHONE:** 780-835-6692

OFFICE: PS 130 **E-MAIL:** AEbinu@GPRC.ab.ca

OFFICE HOURS: 8:00 am – 4:30 pm

PREREQUISITE(S)/COREQUISITE: Science 20 or Physics 20 or equivalent,

REQUIRED TEXT/RESOURCE MATERIALS:

PE4A Book 1 & 2 Chapters 3-20, Unit 9 & 10-48

PE4A Workbook #1 & 2

PE3 section 1 chapters 12-13

CALENDAR DESCRIPTION:

This course covers basic chemical and physical properties. Included are water treatment and basic chemistry elements, the atom, molecules, chemical equations, basic concepts of matter, and properties of engineering materials

CREDIT/CONTACT HOURS: 22 hours

DELIVERY MODE(S): Fairview Campus only

OBJECTIVES:

1. Define and explain the importance and application of the following mechanical properties of a material: brittleness, hardness, ductility, malleability, plasticity, elasticity, and toughness.
2. Describe the following material tests: tension test, Brinell and Rockwell hardness tests, Charpy and Izod impact tests.
3. Describe the blast furnace and cupola furnace methods for iron production, and compare the characteristics of gray, white, malleable, and ductile cast iron.
4. Define steel and explain the compositions and characteristics of low carbon, medium carbon and high carbon steels.
5. Define alloy steels, and explain the benefits of each of the following alloying elements: nickel, chromium, molybdenum, vanadium, copper, lead, manganese and tungsten.
6. Explain the purposes for hot working, cold working and heat treating of metals.
7. Describe the production of carbon and alloy steel, using the open hearth, basic oxygen and electric-arc furnace processes.
8. Describe the properties and applications of non-ferrous metals and alloys.

Explain the basic structure, properties and applications of polymers, ceramics and composites.

TRANSFERABILITY: As per ABSA requirements

GRADING CRITERIA:

Method	Percentage	Minimum
Course assignments	15%	50%
CML quizzes	15%	50%
Unit Exams	30%	50%
Final Exam	40%	50%
	100%	50%
		65% average, with no mark below 50%

EXAMINATIONS: As per Power Engineering Student Manual

STUDENT RESPONSIBILITIES:

As per Power Engineering Student Manual

STATEMENT ON PLAGIARISM AND CHEATING:

Please refer to pages 49-50 of the College calendar regarding plagiarism, cheating and the resultant penalties. These are serious issues and will be dealt with severely.

COURSE SCHEDULE/TENTATIVE TIMELINE:

Aug 30-Nov. 12, 2010
Wednesday's – 1430-1620
Thursday's – 1430-1620
Friday's – 0830-0930 & 1030-1120