PELM 3100, Applied Science

4 Credits, 6 months

Course Description

Topics include applied math, applied mechanics, thermodynamics, and applied science as identified in the Alberta Boilers Safety Association Reference Syllabus for the first paper of 3rd Class Part A Power Engineering.

Pre and Co-requisites

ABSA Fourth Class Power Engineering Certificate

Course Learning Outcomes (CLOs)

Upon successful completion of the course, the student shall be able to:

CLO1 Solve problems using algebraic operations, including equations and logarithms.
CLO2 Explain trigonometric concepts and solve problems involving trigonometry.
CLO3 Solve problems involving the areas of plane figures and the surface areas and volumes of three-dimensional objects.
CLO4 Explain concepts and solve problems involving vectors, force systems and friction.
CLO5 Explain concepts and solve problems involving work, power, energy, linear motion, and angular motion.
CLO6 Explain concepts and solve problems involving material stresses and bending of beams.
CLO7 Explain concepts and solve problems involving simple machines and fluids.
CLO8 Explain heat terminology and perform heat calculations during changes of state and calorimeter tests.
CLO9 Define properties of saturated and superheated steam and, using information from the steam tables, calculate the heat required to produce steam at various conditions; determine the evaporation in steam boilers.
CLO10 Explain the laws of perfect gases and perform calculations involving the expansion and compression of gases.
CLO11 Explain the fundamental principles in the structure, formation and interaction of chemical compounds and the importance of chemistry in industrial operations.
CLO12 Explain the production, properties and applications of metallic and non- metallic materials.
CLO13 Explain the mechanisms that cause corrosion and the methods used to monitor and control corrosion.
CLO14 Identify and interpret components of typical engineered drawings used in industry.
CLO15 Explain concepts and perform calculations involving the thermal expansions of solids and liquids and heat transferred through a substance.

Evaluation

Assessment Type	Percentage
Chapter and Unit Quizzes	15%
Section Test 1	10%
Section Test 2	10%
E1 – Final Exam	65%

Course Completion Requirements

Minimum passing mark of 65% or C is required.

Grading Scale

4.0 Grade Scale	Alpha Grade	Percentage Grade
4.0	A+	93-100
4.0	A	85-92.9
3.7	A-	80-84.9
3.3	B+	77-79.9
3.0	B	74-76.9
2.7	B-	70-73.9
2.3	C+	67-69.9
2.0	C	64-66.9
1.7	C-	60-63.9
1.3	D+	55-59.9
1.0	*D	50-54.9
0.0	F	0-49.9

Land Acknowledgement

We respectfully acknowledge that Keyano College is on Treaty No. 8 Territory, the ancestral and traditional territory of the Cree, Dene, and Métis people.

Review Date: March 4, 2024