KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY
CHEMICAL ENGINEERING DEPARTMENT
CHE 251: CHEMICAL PROCESS CALCULATIONS

INSTRUCTOR: Dr. (Mrs.) Mizpah A. D. Rockson

COURSE DESCRIPTION

This course is to introduce second year chemical engineering students to the profession of chemical Engineering and Engineering in general. **Topics to be covered include:** Units and dimensions, definitions, calculations and estimation of physical properties, material balance calculations on various unit processes; including recycle, purge and bypass, stoichiometry and yield

Course Objectives

At the end of this course, students will be able to understand and explain:

Introductory Concepts:

- Understand what is engineering
- Understand what chemical engineering
- Convert from one set of engineering units to another
- Compare dimensionless groups
- Interconvert mass, volume and moles and their flows
- Interconvert between different temperature scales

Material Balances:

- Introduction to material balances and solution strategies
- Perform material balances for systems with recycle, bypass and purge streams
- Calculate the limiting reactant, excess reactants, fractional conversion and fractional yield
- Determine combustion processes
- Perform elemental balances

Reference Texts

David M. Himmelblau, & James B. Riggs: Basic Principles and Calculations in Chemical Engineering, 5th Edition, Prentice Hall International Series,

Mark T. Holtzapple and W. Dan Reece (2000): Foundations of Engineering, McGraw-Hill

Richard M. Felder and Ronald W. Rousseau (2005): Elementary Principles of Chemical Processes (3rd Edition), John Wiley & Sons Inc.