

Course	458.205	Lecture	001	Title	Basic Computer Methods in Chemical and Biological Engineering	Credit	3
Instructor	J. M. Lee						

Prerequisite	Principle of Computers, Introduction to Chemical and Biological Engineering
* 1. Objective	<ul style="list-style-type: none"> ○ Basic unit processes including reactors and separators in chemical plant ○ Process analysis and synthesis ○ Mass and energy balances and their applications for the whole process of a plant.
* 2. Text	R. M. Murphy, Introduction to Chemical Processes: Principles, Analysis, Synthesis, McGraw Hill, 2007
* 3. Lectures	<p style="text-align: center;">강의내용</p> <p>W1) Ch. 1: The chemical process industry; Raw material choices, reaction path synthesis; Balancing chemical reactions; Generation-consumption analysis; Atom and process economy</p> <p>W2) Ch. 2.1-2.3: Process flowsheeting; Chemical process equipment; Process variables</p> <p>W3) Ch. 2.4-2.5: The material balance equation; Process flow calculations</p> <p>W4) Ch. 2.6: Degree of freedom analysis</p> <p>W5) Ch. 3.1-3.2: Mathematics of material balances</p> <p>W6) Ch. 4.1-4.3: Chemical reactors; Review of material balances with reactors; Conversion and its effect on reactor; Flowsheet synthesis</p> <p>W7) Ch. 4.3.5-4.4: Multiple reactions; Selectivity and yield; Chemical reaction equilibrium</p> <p>W8) Ch. 5.1-5.3: Separation technologies; Review of material balances with separators; Separator performance specifications; Midterm Exam</p> <p>W9) Ch. 5.4-5.5: Phase equilibrium</p> <p>W10) Ch. 5.6: Equilibrium-based separations</p> <p>W 11) Ch. 5: Continued</p> <p>W 12) Ch. 6.1-6.3.3.: The energy balance equation</p> <p>W 13) Ch. 6.3-6.4: Working with enthalpy</p> <p>W 14) Ch. 6.5-6.6: Process energy calculations</p> <p>W 15) Ch. 6.7: Safe and efficient energy use, Final exam</p>