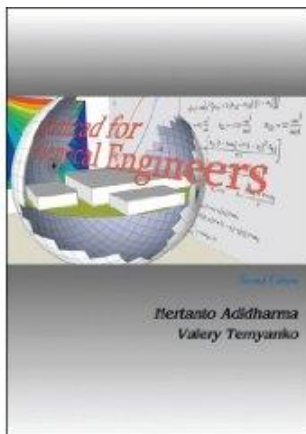


CHE 2060 Introduction to Chemical Engineering Computing
Required course

Credit 3. Develops computational skills needed in Chemical Engineering applications and reinforces a computational tool that will be useful in subsequent classes.

Prerequisites: ES 1060, MATH 2310 concurrent

Textbook: Adidharma & Temyanko, "Mathcad for Chemical Engineers", 2nd ed., Trafford, 2009.



Also available at

Amazon.com (<http://amzn.com/1426908121>)

Barnes&Noble.com

(<http://search.barnesandnoble.com/Mathcad-For-Chemical-Engineers-Second-Edition/Valery-Temyanko/e/9781426908125/?itm=1&usri=Mathcad+for+Chemical+Engineering>)

Instructor: Sugata Tan (section 3: M-W-R 5:10-6:00 p.m.).

Office: EN 3016; e-mail: sptan@uwyo.edu

Office hours: T 5-6 p.m., F 5-7 p.m.

Objectives:

1. To introduce Chemical Engineering applications.
2. To develop computational skills needed in:
 - Property estimation
 - Material and energy balance
 - Thermodynamics
 - Heat, mass, and momentum transfer
 - Fluid flow
 - Kinetic and reactor design
 - Unit operations
 - Process control
 - Process economics
 - Statistical thermodynamics
3. To reinforce a computational tool (Mathcad), which will be useful in subsequent Chemical Engineering classes.

Class topics:

1. Introduction
2. Getting Started with Mathcad
 - 2.1. Mathcad Worksheet and User Interface
 - 2.2. Variables and Functions
 - 2.3. Arrays: Vector and Matrix
 - 2.4. Working with Units: Built-in and User-defined
 - 2.5. Graphics Features: x-y Plot of Data and Functions
 - 2.6. Symbolic Math Capabilities
3. Non-linear equation
 - 3.1. Polynomial
 - 3.2. Non-polynomial
4. System of equations
 - 4.1. System of linear equations

- 4.2. System of non-linear equations
 - 4.3. System of equations with constraints
 - 5. Curve Fitting
 - 5.1. Interpolation: linear and cubic spline
 - 5.2. Regression: linear, polynomial, and non-linear
 - 6. Differentiation and Integration
 - 6.1. Differentiation for functions and data
 - 6.2. Integration for functions and data
 - 7. Optimization
 - 7.1. Extreme value problems
 - 7.2. Linear programming
 - 7.3. Non-linear programming
 - 8. Differential equations
 - 8.1. Ordinary differential equation: first and higher order, initial value and boundary value problems, and system of differential equations
 - 8.2. Partial differential equation
- If time permits:
- 9. Miscellaneous
 - 9.1. Data Handling
 - 9.2. Data Exchange with Excel
 - 9.3. Introduction to Mathcad programming: conditionals and loops

Course Requirements

Homework	20%
Tests (2)	20%
Midterm	30%
Final Exam	30%

Grading Policy

Grades will be assigned according to the scale below based on the above course requirements:

A =	90 – 100
B =	80 – 89
C =	70 – 79
D =	60 – 69
F =	0 – 59

Class Policy

Late Policy: Late assignments are not accepted (assignments are always due at 5 pm).

Incomplete Grade Policy: Incomplete grades will not be given, unless sound justification can be provided.

Academic Honesty

The University of Wyoming is built upon a strong foundation of integrity, respect and trust. All members of the university community have a responsibility to be honest and the right to expect honesty from others. Any form of academic dishonesty is unacceptable to our community and will not be tolerated. Teachers and students should report suspected violations of standards of academic honesty to the instructor, department head, or dean.

Disability Statement

If you have a physical, learning, or psychological disability and require accommodations, please let the instructor know as soon as possible. You must register with, and provide documentation of your disability to University Disability Support Services (UDSS) in SEO, room 330 Knight Hall.)