

**Process Thermodynamics
ECH3101**

Class Periods: M, W, F | Period 4 (10:40 AM - 11:30 PM)

Location: PSY 130

Academic Term: Spring 2020

Instructor:

Dr. Oscar D. Crisalle

Professor

University of Florida, Chemical Engineering Department

Room: 419a ChE Bldg.

Email: crisalle@che.ufl.edu

Phone: 352-392-5120

Office Hours: Open-door policy. Students can also make an appointment.

Teaching Assistant:

Mr. Abdulateef Gari

University of Florida, Chemical Engineering Department

Room: PERC 108

Email: agari@ufl.edu

Office hours: T, W 12:00 – 2:00 PM

Grader:

Not applicable

Course Description

The main goal is to introduce fundamental principles of thermodynamics including the first and second laws of thermodynamics. The main focus is on the development of skills allowing solving problems that involve closed and open systems as well as selected processes.

Course Pre-Requisites

CHM 4411 or PHY 3513, COT 3502 and ECH 3264

Course Objectives

Upon completion of this course the student will be able to:

1. Demonstrate knowledge of the definition and origin of the extensive and intensive thermodynamic variables as well as the laws of thermodynamics used to solve problems involving closed and open systems as well as selected thermodynamic processes
2. Determine the thermodynamic properties of pure substances and simple mixtures using the ideal-gas approximation, equations of states, and thermodynamic graphs and tables.
3. Develop mathematical descriptions of closed and open systems, with pure substances, using mass, energy, and entropy balances.

Course Topics

1. Introduction: Definitions and Units

Process Thermodynamics

ECH3101 Prof. Oscar D. Crisalle

2. Mass Balances
3. Energy Balances
4. Entropy Balances
5. Thermodynamic Properties of Real Substances
6. Liquefaction and Power Cycles (selected topics)

Professional Component (ABET):

The ABET Student Outcomes assessed in this course are:

1. SO 1: An ability to identify, formulate, and solve complex problems by applying principles of engineering, science, and mathematics
2. SO 7: An ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Required Textbook

Stanley I. Sandler, Chemical, Biochemical, and Engineering Thermodynamics, 5th Edition, Wiley, 2006

Attendance Policy, Class Expectations, and Make-Up Policy

Class attendance is strongly recommended. Excused absences are consistent with university policies in the undergraduate catalog (<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>) and require appropriate documentation. Requests for make-up tests will be granted only if appropriate documentation about illness, family emergency or UF-related travel are given to the Instructor.

Evaluation of Grades

Assignment	Total Points	Percentage of Final Grade
Homework	100*	15 %
Quizzes	100*	5 %
Midterm 1	100	25 %
Midterm 2	100	25 %
Final Exam	100	30%
		100%

* It is expected that each student will have the total score larger than 50 % for all homework assignments during the semester. Similarly, the total score larger than 50 % is expected for all quizzes during the semester. A failing grade will be assigned to students if the total score for all homework assignments and all quizzes is smaller than 50%.

Grading Policy

The grades will be curved. Depending on the class performance, B or B+ will correspond to the class average, which will be determined as shown in the Evaluation of Grades section.

More information on UF grading policy may be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Students Requiring Accommodations

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <https://www.dso.ufl.edu/drc>) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Course Evaluation

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu/evals>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

University Honesty Policy

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code (<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see:

<http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html>

Campus Resources:

Health and Wellness

U Matter, We Care:

If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.

Counseling and Wellness Center: <http://www.counseling.ufl.edu/cwc>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu.
<https://lss.at.ufl.edu/help.shtml>.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling. <https://www.crc.ufl.edu/>.

Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.
<https://teachingcenter.ufl.edu/>.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.
<https://writing.ufl.edu/writing-studio/>.

Student Complaints Campus: https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf.

On-Line Students Complaints: <http://www.distance.ufl.edu/student-complaint-process>.