

Process Thermodynamics

ECH3101 | Section 207H

Class Periods: M, W, F | Period 5 (11:45 AM - 12:35 PM)

Location: Online delivery via Zoom

Academic Term: Fall 2020

Instructor:

Dr. Oscar D. Crisalle

Professor

University of Florida, Chemical Engineering Department

Room: 319a ChE Bldg.

Email: crisalle@che.ufl.edu

Phone: 352-392-5120

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

Teaching Assistant:

TBA

Office hours: TBA

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.

Materials and Supply Fees

List if applicable

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.

An online version of the textbook is available through UF All ACCESS.

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 provided and verified by the Instructor.

Evaluation of Grades

| Assignment | Total Points¹ | Weighted Percentage |
|-------------------|---------------------------------|----------------------------|
| Homework | 100 ² | 10 % |
| Quizzes | 100 ² | 10 % |
| Midterm 1 | 100 | 25 % |
| Midterm 2 | 100 | 25 % |
| Final Exam | 100 | 30% |

- ¹ The points for each individual Homework assignment will be summed and the total will be normalized to 100 points total number of points earned through this component will be normalized to 100. Likewise for the Quizzes.

A failing grade will be assigned to students who do not meet the following minimal-performance criteria: A total of 50/100 normalized points on the Homework or the Quizzes.

Grading Policy

The following is given as an illustration only. The policy may be changed at the instructor's discretion to better assess student performance.

| Weighted | Percentage | Score | Grade | Grade Points |
|-----------------|-------------------|--------------|--------------|---------------------|
| 90.00 | - | 100 | A | 4.00 |
| 80.00 | - | 75.01 | A- | 3.67 |
| 75.00 | - | 70.01 | B+ | 3.33 |
| 70.00 | - | 65.01 | B | 3.00 |
| 65.00 | - | 60.01 | B- | 2.67 |
| 60.00 | - | 50.01 | C+ | 2.33 |
| 50.00 | - | 48.01 | C | 2.00 |
| 48.00 | - | 46.01 | C- | 1.67 |
| 46.00 | - | 44.01 | D+ | 1.33 |
| 44.00 | - | 42.01 | D | 1.00 |
| 42.00 | - | 40.01 | D- | 0.67 |
| 40.00 | - | 0.00 | E | 0.00 |

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.

Commitment to a Safe and Inclusive Learning Environment

The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:

- Your academic advisor or Graduate Program Coordinator
- Robin Bielling, Director of Human Resources, 352-392-0903, rbielling@eng.ufl.edu
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

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:

<https://registrar.ufl.edu/ferpa.html>

Online Course Recording

Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

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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>.