MEMORANDUM FOR STUDENTS ENROLLED IN

CHEN 3301 Chemical Engineering Thermodynamics I – Section 01

Lecture times: MW 9:00 am -10:20 am, RBN 2007

Instructor: Shuhao Liu

E-mail: SLIU@uttyler.edu

Office hours: MW 11:30 am – 1:00 pm (RBN 2041)

Welcome to CHEN 3301 - Chemical Engineering Thermodynamics I. This course covers fundamental thermodynamic principles, including heat and work, the laws of thermodynamics, and the thermodynamic properties of real substances. The course has five learning objectives (see below) that can be broadly grouped into two categories: (a) acquire the ability to analyze, set up, and solve energy flows problems, (b) acquire the ability to analyze, set up, and solve equilibrium state problems. The skills acquired in this course are essential in later Chemical Engineering courses.

Mode of delivery: face-to-face.

Course Objectives:

1. **Identify and classify thermodynamic systems and processes:** *Distinguish between open and closed systems, define system boundaries, and classify processes as isothermal, adiabatic, isobaric, or isochoric, while assessing equilibrium and steady-state conditions*
2. **Determine thermodynamic properties of pure substances:** *Use phase diagrams, property tables, and equations of state to calculate relevant thermodynamic properties for pure substances across different phases.*
3. **Apply conservation of mass and the First Law of Thermodynamics to quantify energy and material balances:** *Solve mass and energy balance problems for steady-state and transient systems using appropriate control volume or control mass frameworks, including heat and work interactions.*
4. **Apply the Second Law of Thermodynamics to evaluate thermodynamic processes:** *Analyze entropy changes and generation to determine the direction of processes and identify reversible and irreversible behavior in thermodynamic systems*
5. **Evaluate thermodynamic cycles using mass, energy, and entropy balances:** *Apply energy and entropy balances to analyze complete thermodynamic cycles, quantify performance metrics such as efficiency and work output, and assess the effects of irreversibility and lost work.*
6. **Derive thermodynamic property relationships using mathematical modeling principles:** *Develop and manipulate relationships between thermodynamic properties of pure substances using partial derivatives, equations of state, and property relations, enabling analysis*

7. **Propose efficiency improvements to thermodynamic systems based on first and second law principles:** *Develop and justify modifications to existing systems or processes to improve performance, drawing upon course concepts and independent research*

These course objectives will be used to evaluate the student learning outcome (SO1) for ABET:

SO1 - An ability to identify, formulate, and solve complex engineering problems by applying principles of Engineering, Science, and Mathematics. Recording of Class Sessions

Class sessions may be recorded by the instructor for use by students enrolled in this course. Recordings that contain personally identifiable information or other information subject to FERPA shall not be shared with individuals not enrolled in this course unless appropriate consent is obtained from all relevant students. Class recordings are reserved for students enrolled in the course and for educational purposes only. Course recordings should not be shared outside of the course in any form without express permission.

The course has three prerequisites, which must be completed with a minimum grade of "C" before taking this course:

- PHYS 2325/2125 (University Physics I and Physics I Lab)
- MATH 2414 (Calculus II)
- CHEN 2310 (Introduction to Chemical Engineering)

1. Q&A

Our goal is to be commonly available to you for assistance, so you are encouraged and expected to seek additional instruction. Take advantage of additional instruction, it's FREE and really will help! There are several ways you can seek additional instruction:

- ✓ You are welcome to stop by the instructor's office at any time. However, for your own satisfaction, you can ensure the instructor is available at the office by using the following options:
  - Come to Office hours (#). This is the time the instructor has set aside to answer your questions;
  - E-mail instructor to set up a mutually agreeable time to meet with the instructor,
- ✓ E-mail your questions to the instructor.

2. Class Room Procedures:

a. Bring study notes, **textbooks**, note-taking material, and a calculator to every class. You may not borrow or exchange calculators during graded events. If your calculator fails during a graded exercise, I am not responsible for furnishing a substitute. Class preparation is your individual responsibility.

b. Textbook:
   - Required:
     Fundamentals of Chemical Engineering Thermodynamics, Dahm and Visco ISBN-13 : 978-1111580704 (DV)

     Reference textbook:
     Chemical, Biochemical, and Engineering Thermodynamics 5th Edition, Stanley I. Sandler ISBN-13: 978-0470504796
     Engineering and Chemical Thermodynamics 2nd Edition, Milo D. Koretsky, ISBN-13: 978-0470259610

Fundamentals of Chemical Engineering Thermodynamics, Themis Matsoukas, ISBN-13: 978-0132693066

c. *Recitations:*
Each lecture will contain at least one recitation session. These will be the students' opportunity to practice problem-solving skills by applying the concepts learned in lectures. These skills will be needed for solving homework, quizzes, and exam problems. Please bring your textbook for the recitation sessions.

3. Evaluations:

a. *ACADEMIC DISHONESTY:* Representation of other's work as your own will not be tolerated. Cheating on examinations, quizzes, and homework and the false representation of work will be interpreted as academic dishonesty. Academic dishonesty will be subject to disciplinary action as outlined by the UT Tyler Student Guide on Conduct and Discipline.

b. *Participation and Course Attendence:* This is a **face-to-face** course; therefore, **in-person attendance and active participation are expected at every class meeting**. If you must miss class, you are expected to **notify the instructor at least 12 hours in advance** (unless an emergency prevents advance notice).

- Unexcused absences may affect your course grade as follows:
  - **Unexcused absence penalty:** Each **unexcused** absence will result in a **1-point deduction** from the final course score.
  - **Excessive unexcused absences (grade cap):**
    - **More than 5 unexcused absences (starting with the 6th)** will result in a **maximum final course grade of C**, regardless of other performance.
    - **More than 10 unexcused absences (starting with the 11th)** will result in a **final course grade of D (course not passed)**.

Absences supported by a **reasonable/valid justification** (e.g., documented illness, university-approved travel, family emergency) may be considered **excused** at the instructor's discretion.

c. *Homeworks:* A set of homework problems will be assigned approximately every two weeks. All homework is mandatory and will count toward your grade. As an engineer, your goal is to deliver a clear, logical, and professional presentation of your work that is accurate and correct. As such, both the presentation and the accuracy of your work are important, and both will be graded. You must show all of your work and leave "footprints" so that it can be easily followed. No guesswork should be required to see what you did. For each homework problem, the corresponding topic and numerical answers will be provided. You are encouraged to work in groups, but the work you submit should be your own. **Homeworks are *due* at the 11:59 pm of the assigned date, and they must be submitted online via Canvas.**

d. *Open-ended project (**presentation and report needed**):* One group open-ended project will be assigned for the semester as a team (2~3 people per group). The instructor will assign groups in the first two weeks. The groups will need to submit the topic for the project at the end of Week 6 for approval from the instructor (a one-page, 200-word summary is needed to be submitted for approval; you can send the draft anytime for the instructor to review before the deadline of the summary). Open-ended projects are characterized by the absence of a single, definitive answer/solution. Instead, they are creative exercises in which you are encouraged to apply the concepts learned in the course and search your own resources. They must be informative, qualitative, and quantitative. In either case, ensure that your

presentation and report are clear and detailed, as you will be evaluated on the approach and thought process you use in these exercises.

i. A key aspect of this project is applying engineering design to produce solutions that meet specified needs, considering public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

For this project, each group will explore and develop a thermodynamic engineering system design. You will analyze an existing system, identify its limitations, and propose a new or improved design. Your design must include a detailed thermodynamic analysis and calculations and demonstrate how the proposed improvements align with the specified needs and broader considerations.

1. *Introduction:*
    a. *Provide the necessary background on the system you have chosen to study.*
    b. *Explain why this system is significant and what motivated your selection.*
    c. *Include a brief overview of its current applications and importance in the context of public health, safety, welfare, and global, cultural, social, environmental, and economic factors.*
2. *Analysis of Existing System*
    a. *Discuss the current or previous implementations of the system.*
    b. *Evaluate its performance, identifying key metrics such as efficiency, reliability, cost, or environmental impact.*
    c. *Highlight its drawbacks or areas where improvement is needed.*
3. *Proposed Design and Thermodynamic Analysis: How do you achieve the improvement by your design of the system, including the thermodynamic analysis and calculation of the process*
    a. *Describe your proposed system design, detailing the modifications or innovations you are introducing.*
    b. *Include a thermodynamic analysis of your proposed design, such as calculations for energy efficiency, heat transfer, work output, or other relevant metrics.*
    c. *Compare the performance of your design with the existing system, using quantitative data to show potential improvements.*

*The tentative grading for the open-ended project report will be given by combining if including required information (50%) with the rubric (50%): (**The final rubric will be updated in the Canvas, please see the updated Rubric in canvas, here is just for your reference**):*

Rubric Outcome 2: an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors					
Performance Indicators	**1 Unsatisfactory**	**2 Below Satisfactory**	**3 Satisfactory**	**4 Commendable**	**5 Superior**
Define Problem	Demonstrates no ability in identifying a problem statement or related contextual factors.	Demonstrates a limited ability in identifying a problem statement or related contextual factors.	Begins to demonstrate the ability to construct a problem statement with evidence of most relevant contextual factors, but problem statement is superficial.	Demonstrates the ability to construct a problem statement with evidence of most relevant contextual factors, and problem statement is adequately detailed.	Demonstrates the ability to construct a clear and insightful problem statement with evidence of all relevant contextual factors.
Quality Design	The design selected is not feasible	The design selected has some problems	The design selected appears adequate	The design is promising	The design is of superior level
Propose Solutions with realistic Constraints	Lack of realistic constrains and solutions	Proposes design is difficult to evaluate because it is vague and marginal use of realistic constraints in the design	Proposes solution that is "off the shelf" rather than individually designed to address the specific contextual factors of the problem.	Proposes design indicates comprehension of the problem. Constraints were considered, in the solutions	Proposes design that indicates a deep comprehension of the problem. Solution are sensitive to realistic constrains such as: public health, safety, and welfare, and global, cultural, social, environmental, and economic factors
Evaluate Potential Solutions	Inadequate results and discussion	Evaluation of solutions is superficial. Contains cursory, surface level explanation, unable to make proper connection between results and discussion.	Evaluation of solutions is brief Explanation lacks depth and Able to validate	Evaluation of solutions is adequate. Connects the results together to validate the design, and includes the some of following: reviews logic/reasoning, examines feasibility of solution, and weighs impacts of solution.	Evaluation of solution is deep. Thorough and insightful explanation, with clear connections to validate the design. Deeply and thoroughly reviews logic/reasoning, examines feasibility, and weighs impacts.
Organization	Organization is deficient	Organization needs improvement	Satisfactory organization	Commendable organization	Excellent organization

A detailed report follow the below details:

a. Cover page, including title, names of group members, and the date.
b. Introduction. This section should explain the reasons for doing the work, give some background and your knowledge of the project, and clearly state the key goals and objectives of the assignment.
c. Objectives
d. Procedures: Outline in detail the improvement design work or any special techniques that you plan to do, and their fundamental concepts, such as equations, formulas, or system design sketch.
e. Results. Results should be presented in tables and/or graphs, as appropriate. A brief description of the results should be included. Each table and graph presented here should be clearly explained in the text, in such a way that the reader should be able to understanding their meaning and how they were constructed.
f. Discussion of results. The discussion should give a critical appraisal of what you have discovered. Also include comments on the major sources of error and any suggestions for improvements
g. Conclusions and Recommendations. A conclusion summarizes to the reader what was accomplished and the findings of the project. This should include recommendations for future trials.
h. References. These should include all pertinent information, for example: Perry, R.H., and Chilton, C.H., eds., Chemical Engineers' Handbook, 6th. ed., McGraw-Hill, New York (1984).
i. Acknowledgement. This should include the resources or assistance received from others during the whole project. **Also contribution to other team members needed to be stated in this section.**

The rubric will be applied to the presentation grading: (The final rubric will be updated in the Canvas, please see the updated Rubric in canvas, here is just for your reference):

Rubric Outcome 3: an ability to communicate effectively with a range of audiences					
Performance Indicators	**1 Unsatisfactory**	**2 Below Satisfactory**	**3 Satisfactory**	**4 Commendable**	**5 Superior**
Content	Content is lacking major components	Content needs improvement	Good content	Clear and strong content	Advanced insight, exceeds goals of project, focus on new understandings
Visuals and Format	Visuals are lacking major components	Visuals need improvement	Good visuals	Clear and strong visuals and or appropriate format	Use and variety of visual aids maximizes the communication. Excellent format.
Presentation Skills	Presentation skill is deficient	Presentation skill needs practice	Good presentation skill	Clear and confident presentation skill and properly handling of questions	Succinct, clear, coherent, professional presentation. Fully justifies findings and answers to questions.
Organization	Organization is deficient	Organization needs improvement	Good organization	Commendable organization	Excellent organization

For the Presentation, no more than 15 min.
Regarding the report: no more than 8 pgs but not less than 4 pgs. 1-1.5 lines spacing and font between 11~14 will be acceptable.

e. Late Submissions. It is a basic principle of professionalism that "Professionals are not Late." A "COORDINATED LATE" submission occurs when you will miss the due date for a graded assignment and you contact me in advance. Notification immediately before the submission will not suffice. Point cuts up to the amounts below may be assessed for a "COORDINATED LATE" submission:

1. 0-24 hours late — a deduction of 25% of the earned grade
2. 24-48 hours late — a deduction of 50% of the earned grade
3. More than 48 hours late — No credit.

Obviously, there are circumstances that will occur and make a timely submission impossible and I will work with you when and if they occur.

f. *Quizzes:* Quizzes will be administered throughout the semester with prior notice. They will take place at the beginning of a new topic. The quizzes will cover only concepts or questions from examples/homework (value may be modified) from previously covered topics.

g. Mid-Term Exams and Final Exam: **There will be two Midterm Exams and one Final Exam processed in the classroom**. The Midterm will be eighty minutes long, and the Final will be two hour long. The dates for Exams are included in the course schedule. Official reasons for missing an exam are outlined in the "Student Handbook. You are required to take a make-up Exam, regardless of your reason for missing the scheduled Exam. Report any conflict to me as soon as possible before the Exam. You can use a **TI-30 calculator** (or FE equivalent). ***A single side of a note sheet, handwritten or printed, could be allowed in the exams with a size smaller than or equal to the letter size.***

h. The HWs, quiz and exams will be graded based on the rubric:(**The final rubric will be updated in the Canvas, please see the updated Rubric in canvas, here is just for your reference**):

Rubric Outcome 1: an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics					
Performance Indicators	**1 Unsatisfactory**	**2 Below Satisfactory**	**3 Satisfactory**	**4 Commendable**	**5 Superior**
Identify Problem	Shows no understanding in identifying the problem	Shows little understanding in identifying the problem	Shows adequate understanding of the major facets of the problem	Shows understanding of most facets of the problem	Shows understanding of most or all facets of the engineering problem
Formulate Problem	Cannot create a mathematical model to solve the engineering problem	Creates a mathematical model, but it has serious errors or is missing major components or is inappropriately constructed	Mathematical model is mostly correct, but some details are missing or inappropriately included	Mathematical model is basically correct and reasonably complete, but some minor details are missing or inappropriately included	Mathematical model was correctly created and shows a complete understanding of the engineering problem
Solve Problem	No apparent sequence to solving the problem or significant steps missing	Several steps in the solution technique are present but it is incomplete, or the order is incorrect	Some solution steps are present, and the solution sequence is almost correct with some errors	Most solution steps are present, and the solution sequence is generally correct with minor errors	All solution steps are present, and the solution sequence is readily apparent and correct
Complexity - involving many components parts or subproblems	No complex solution attempted or shows no understanding of necessary components parts or subproblems	Shows little understanding of complex solution, misses major points and makes significant errors – some components, parts or sub-problems	Shows adequate Shows adequate understanding of complex problem and is correct except for some errors all major components parts or subproblems	Shows understanding of Shows understanding of complex problem and is correct except for small errors all major components parts or subproblems	Shows understanding of complex problem Creates a complex solution – all major components parts or subproblems

4. Grading:

a. Grades will be based entirely on the student's demonstrated ability to develop detailed, neat, organized, and correct solutions to the problems presented. Correct answers accompanied by incorrect, incomplete, or untidy solutions may receive no credit. Incorrect answers with clear step, partial correct explanation, steps and solutions will be considered for partial credit. Answer is important, but how to get the correct answer is also significant.

b. The presentation of open-ended reports is group work, and each member must present a partial of it.

c. The report of Open-ended reports are required to include the contribution of each member

d. The course points will be assigned as shown below:

Course Points	
Open-end project (Presentation + Slide)	(8%)
Homework	(18%)
Quizzes	(15%)
Mid-term	(30%)
Final exam	(16%)
Attendence	(5%)
Open-end project (report)	(8%)
	Total 100 (100%)

Grade Scale based on points	
A	90~100
B	73~89
C	60~72
D	<60
F	<50

5. Collection of Student Work:
Throughout the semester, I will collect student work (best, average, and worst) for the ABET course and outcomes notebooks. This will require me to make a copy of your work, keep your original and return a copy of the graded work to you. I will not draw attention as to what level of work you accomplished.

6. Use of Generative AI in This Course

Generative AI tools (such as ChatGPT or Gemini or Copilot) are permitted only for specific assignments or situations, and appropriate acknowledgment is required. This course includes open-ended assignments where the use of generative artificial intelligence (AI) tools is permitted. When AI use is allowed, it will be clearly stated in the assignment directions, and all uses of generative AI must be properly acknowledged and cited.

Copying and pasting from AI-generated content or using AI to generate entire reports, presentations, or slides is strictly prohibited. Generative AI tools are to be used only as a supplementary resource to help you quickly understand new concepts that may be involved in your open-ended topics. It is essential to cross-check AI-generated information with other reliable sources, as AI can sometimes produce incorrect or misleading information.

In all other cases, including homework, quizzes, and exams, the use of generative AI is not allowed at any stage of the assignment.

7. Assigned readings:

The class schedule will include assigned readings for every lecture. Students who read the corresponding sections of the book *before each class* will certainly make the most of the lectures, so this is highly recommended. In addition, the instructor will periodically post the lecture notes on the course website. Doing the assigned reading prior to class will help you to understand the material presented during the instruction and will fill in gaps for things we do not cover (***I will not cover everything***). It will also make you more familiar with terms and concepts to be covered.

8. **UT Tyler Honor Code** - Every member of the UT Tyler community joins together to embrace: Honor and integrity that will not allow me to lie, cheat, or steal, nor to accept the actions of those who do.

9. **Students Rights and Responsibilities:** to know and understand the policies that affect your rights and responsibilities as a student at UT Tyler, please follow this link: http://www.uttyler.edu/wellness/rightsresponsibilities.php.

10. **Campus Carry** - We respect the right and privacy of students 21 and over who are duly licensed to carry concealed weapons in this class. License holders are expected to behave responsibly and keep a handgun secure and concealed. More information is available at http://www.uttyler.edu/about/campus-carry/index.php.

11. **UT Tyler a Tobacco-Free University** - All forms of tobacco will not be permitted on the UT Tyler main campus, branch campuses, and any property owned by UT Tyler. This applies to all members of the University community, including students, faculty, staff, University affiliates, contractors, and visitors. Forms of tobacco not permitted include cigarettes, cigars, pipes, water pipes (hookah), bidis, kreteks, electronic cigarettes, smokeless tobacco, snuff, chewing tobacco, and all other tobacco products. There are several cessation

programs available to students looking to quit smoking, including counseling, quitlines, and group support. For more information on cessation programs please visit www.uttyler.edu/tobacco-free.

12. **Grade Replacement/Forgiveness and Census Date Policies** - Students repeating a course for grade forgiveness (grade replacement) must file a Grade Replacement Contract with the Enrollment Services Center (ADM 230) on or before the Census Date of the semester in which the course will be repeated. Grade Replacement Contracts are available in the Enrollment Services Center or at http://www.uttyler.edu/registrar. Each semester's Census Date can be found on the Contract itself, on the Academic Calendar, or in the information pamphlets published each semester by the Office of the Registrar. Failure to file a Grade Replacement Contract will result in both the original and repeated grade being used to calculate your overall grade point average. Undergraduates are eligible to exercise grade replacement for only three course repeats during their career at UT Tyler; graduates are eligible for two grade replacements. Full policy details are printed on each Grade Replacement Contract. The Census Date is the deadline for many forms and enrollment actions of which students need to be aware. These include:
    - Submitting Grade Replacement Contracts, Transient Forms, requests to withhold directory information, approvals for taking courses as Audit, Pass/Fail or Credit/No Credit.
    - Receiving 100% refunds for partial withdrawals. (There is no refund for these after the Census Date)
    - Schedule adjustments (section changes, adding a new class, dropping without a "W" grade)
    - Being reinstated or re-enrolled in classes after being dropped for non-payment
    - Completing the process for tuition exemptions or waivers through Financial Aid

13. **State-Mandated Course Drop Policy** - Texas law prohibits a student who began college for the first time in Fall 2007 or thereafter from dropping more than six courses during their entire undergraduate career. This includes courses dropped at another 2-year or 4-year Texas public college or university. For purposes of this rule, a dropped course is any course that is dropped after the census date (See Academic Calendar for the specific date). Exceptions to the 6-drop rule may be found in the catalog. Petitions for exemptions must be submitted to the Enrollment Services Center and must be accompanied by documentation of the extenuating circumstance. Please contact the Enrollment Services Center if you have any questions.

14. **Disability/Accessibility Services** - In accordance with Section 504 of the Rehabilitation Act, Americans with Disabilities Act (ADA) and the ADA Amendments Act (ADAAA) the University of Texas at Tyler offers accommodations to students with learning, physical and/or psychological disabilities. If you have a disability, including a non-visible diagnosis such as a learning disorder, chronic illness, TBI, PTSD, ADHD, or you have a history of modifications or accommodations in a previous educational environment, you are encouraged to visit https://hood.accessiblelearning.com/UTTyler and fill out the New Student application. The Student Accessibility and Resources (SAR) office will contact you when your application has been submitted and an appointment with Cynthia Lowery, Assistant Director of Student Services/ADA Coordinator. For more information, including filling out an application for services, please visit the SAR webpage at http://www.uttyler.edu/disabilityservices, the SAR office located in the University Center, # 3150 or call 903.566.7079.

15. **Student Absence due to Religious Observance** - Students who anticipate being absent from class due to a religious observance are requested to inform the instructor of such absences by the second class meeting of the semester.

16. **Student Absence for University-Sponsored Events and Activities** - Revised 05/19 If you intend to be absent for a university-sponsored event or activity, you (or the event sponsor) must notify the instructor at least two weeks prior to the date of the planned absence. At that time the instructor will set a date and time when make-up assignments will be completed.

17. **Social Security and FERPA Statement** - It is the policy of The University of Texas at Tyler to protect the confidential nature of social security numbers. The University has changed its computer programming so that all students have an identification number. The electronic transmission of grades (e.g., via e-mail) risks violation of the Family Educational Rights and Privacy Act; grades will not be transmitted electronically.

18. **Emergency Exits and Evacuation** - Everyone is required to exit the building when a fire alarm goes off. Follow your instructor's directions regarding the appropriate exit. If you require assistance during an evacuation, inform your instructor in the first week of class. Do not re-enter the building unless given permission by University Police, Fire department, or Fire Prevention Services.

19. **Student Standards of Academic Conduct** - Disciplinary proceedings may be initiated against any student who engages in scholastic dishonesty, including, but not limited to, cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.

i. "Cheating" includes, but is not limited to:

- copying from another student's test paper;
- using, during a test, materials not authorized by the person giving the test;
- failure to comply with instructions given by the person administering the test;
- possession during a test of materials which are not authorized by the person giving the test, such as class notes or specifically designed "crib notes". The presence of textbooks constitutes a violation if they have been specifically prohibited by the person administering the test;
- using, buying, stealing, transporting, or soliciting in whole or part the contents of an unadministered test, test key, homework solution, or computer program;
- collaborating with or seeking aid from another student during a test or other assignment without authority;
- discussing the contents of an examination with another student who will take the examination;
- divulging the contents of an examination, for the purpose of preserving questions for use by another, when the instructors has designated that the examination is not to be removed from the examination room or not to be returned or to be kept by the student;
- substituting for another person, or permitting another person to substitute for oneself to take a course, a test, or any course-related assignment;
- paying or offering money or other valuable thing to, or coercing another person to obtain an unadministered test, test key, homework solution, or computer program or information about an unadministered test, test key, home solution or computer program;
- falsifying research data, laboratory reports, and/or other academic work offered for credit;
- taking, keeping, misplacing, or damaging the property of The University of Texas at Tyler, or of another, if the student knows or reasonably should know that an unfair academic advantage would be gained by such conduct; and
- misrepresenting facts, including providing false grades or resumes, for the purpose of obtaining an academic or financial benefit or injuring another student academically or financially.

ii. "Plagiarism" includes, but is not limited to, the appropriation, buying, receiving as a gift, or obtaining by any means another's work and the submission of it as one's own academic work offered for credit.

iii. "Collusion" includes, but is not limited to, the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any section of the rules on scholastic dishonesty.

iv. All written work that is submitted will be subject to review by plagiarism software.

20. UT Tyler Resources for Students

- UT Tyler Writing Center (903.565.5995), writingcenter@uttyler.edu
- UT Tyler Tutoring Center (903.565.5964), tutoring@uttyler.edu
- The Mathematics Learning Center, RBN 4021, this is the open access computer lab for math students, with tutors on duty to assist students who are enrolled in early-career courses.
- UT Tyler Counseling Center (903.566.7254)

Schedule:

Month	Week	Day	Date	Material	Reading	Evaluation due (11:59 pm)
Jan	1	M	12	Syllabus; course policies; course roadmap		
Jan	1	W	14	Introduction	Ch. 1	
Jan	2	M	19	No class (Martin Luther King, Jr. Holiday)		
Jan	2	W	21	Physical properties of pure compounds (start)	Ch. 2	
Jan	3	M	26	Physical properties of pure compounds (cont.)	Ch. 2	
Jan	3	W	28	Material and energy balances (start)	Ch. 3	
Feb	4	M	2	Material and energy balances (cont.)	Ch. 3	
Feb	4	W	4	Material and energy balances (cont./applications)	Ch. 3	
Feb	5	M	9	Midterm I review / Q&A		
Feb	5	W	11	Mid-term I		Open-ended project topic design summary
Feb	6	M	16	Entropy (start)	Ch. 4	
Feb	6	W	18	Entropy (cont.)	Ch. 4	
Feb	7	M	23	Entropy (cont.)	Ch. 4	
Feb	7	W	25	Entropy (cont./problem solving)	Ch. 4	
Mar	8	M	2	Entropy (wrap-up + review)	Ch. 4	
Mar	8	W	4	Thermodynamic processes and cycles (start)	Ch. 5	
Mar	9	M	9	Spring Break (no class)		
Mar	9	W	11	Spring Break (no class)		

Month	Week	Day	Date	Material	Reading	Evaluation due (11:59 pm)
Mar	10	M	16	Thermodynamic processes and cycles (cont.)	Ch. 5	
Mar	10	W	18	Thermodynamic processes and cycles (cont.)	Ch. 5	
Mar	11	M	23	Thermodynamic processes and cycles (wrap-up)	Ch. 5	
Mar	11	W	25	Midterm II review / Q&A		
Mar	12	M	30	Mid-term II		
Apr	12	W	1	Thermodynamic models of real, pure compounds (start)	Ch. 6	
Apr	13	M	6	Thermodynamic models of real, pure compounds (cont.)	Ch. 6	
Apr	13	W	8	Thermodynamic models (cont.)	Ch. 6	
Apr	14	M	13	Thermodynamic models (cont./applications)	Ch. 6	
Apr	14	W	15	Thermodynamic models (advanced applications)	Ch. 6	
Apr	15	M	20	Open-ended project presentations		
Apr	15	W	22	Open-ended project presentations (cont.)		Open-ended report submission

Tentative Dates for Assessments and Deliverables: There will always be more than one week to complete homework after it is assigned. Assignments due for the week will be announced in Canvas. Please make sure to check Canvas for announcements regularly.

Open-end project presentation and report due dates will not be changed.

Mid-term: tentative date may be changed based on progress

Final Exam: TBA University Schedule

Note: This is a tentative syllabus. As the instructor, I reserve the right to modify this syllabus as needed throughout the semester.