Final Exam Project

ChEn 598R – Statistical Thermodynamics

Overview

The project will serve as both the culminating learning experience in our class and as your final assessment for the course. For the project, you will pick a topic in statistical thermodynamics that we did not cover in the course and create a 10- to 15-minute lecture on that topic.

You will be expected to present your lecture to the class during our final exam period. In addition, you will submit a well-formatted version of your lecture notes and accompanying supplemental material. I have provided some suggestions of lecture topics that you may use, but you are also free to choose one tailored to your specific interests. Be creative and have fun but remember that your time is limited. Be careful to limit your scope and choose a topic that is within your capabilities given the time allotted.

The project deliverables consist of:

- 1. A 1-page project proposal due on Fri., Dec. 6th.
- 2. A 10- to 15-minute oral presentation to be given during our regularly scheduled final on **Tue., Dec. 17th**.
- 3. Lecture notes and supplemental material, due by the time of the oral presentation on **Tue., Dec. 17th**.

The project grades will be based on the rubrics given below.

Note about Academic Honesty

This project is more of an exam than a homework assignment. It is not a typical "takehome exam" in the sense that you are highly encouraged to use the internet, textbooks, the TA, and the instructor for help. However, it is meant to represent **your own effort**, not that of someone else. As such, you should not work together with your classmates on your project. Instead, the project should represent your own effort. This is obviously a gray area, so I expect you to use your best judgment. I don't anticipate any academic dishonesty, but if there is, I will use the "<u>I know it when I see it</u>" standard. Please do your best work!

Description of Deliverables

Project Proposal

The project proposal is meant to help you decide the topic for your lecture and to receive feedback and approval from me. The proposal should be **no more than one page** (single-spaced), and should answer the following questions:

- 1) Project Scope
 - a) Identify the topic you are going to lecture on.
 - b) Describe the primary reference material (e.g. papers, books, etc.) that you will use.

2) Lecture outline

- a) Provide a preliminary lecture outline consisting of the principle(s) you will cover, derivations of fundamental equations, and examples.
- 3) Project Justification
 - a) Explain why this topic is important/interesting to you and to the wider scientific/chemical engineering community.
 - b) Justify why this problem is appropriate for our statistical thermodynamics course.

Project Proposal Rubric (40 pts)

Proposal Element	Points
Project Scope	10
Lecture Outline	10
Project Justification	10
Approval to proceed	10
Formatting (1 page) and grammar	Penalties as needed

Lecture Presentation

<u>The objective of your project is to teach us something new that you learned.</u> As such, the audience for your report is the class. When preparing, assume a level of expertise typical of your classmates. I will be far more impressed (and therefore more likely to give a high score) to a student who teaches us clearly, rather than someone who tries to impress us with complicated details.

Your lecture should contain the following elements.

- 1. Introduction to the topic and a brief justification of its importance
- 2. Explanation of key concepts or ideas
- 3. Derivation of foundational equations
- 4. Examples or classic solution of foundational equation
- 5. Conclusion that ties together key concepts and importance

Oral presentations will be scheduled in our classroom during the time allotted by the University for our final exam in 15-minute slots. Remember that a lecture often has questions and should be interactive in some way, so please plan your time accordingly. You are expected to attend all of the presentations by your classmates.

Final Presentation Rubric (100 pts)

Proposal Element	Points
Quality: Degree of difficulty, relevance to the course, appropriately rigorous methods	30
Execution: Lecture is complete, concepts and equations are correct, clear demonstration of understanding.	50
Communication: Oral presentation is clear and engaging, lecture notes are clean and organized, supplemental material	20