



# CLAUDE AI: A POWERFUL TOOL FOR FACULTY

ROHINI QAMRA

DEPARTMENT OF CHEMISTRY

NEW YORK UNIVERSITY

# AGENDA

- Designing an academic course
- Educator's tools
- Activity
- AI - enhancing educator's tools
- Claude AI - Examples
- Summary

# DESIGNING AN ACADEMIC COURSE

- Identify the curriculum / content / textbook.
- Determine the course schedule.
- Recognize who the students are.
- Determine learning objectives.
- Identify methods of assessments.
- Build instructional material.
- Deliver the content.

# DESIGNING AN ACADEMIC COURSE

- Identify the curriculum / content / textbook.
- Determine the course schedule.
- Recognize who the students are.
- **Determine learning objectives.**
- **Identify methods of assessments.**
- **Build instructional material.**
- Deliver the content.

# INSTRUCTIONAL MATERIAL - EDUCATOR'S TOOLS

Lectures  
slides

Learning  
objectives

Writings

Rubrics

Guidelines

Extra-  
readings

Assignments

Online  
submissions

Collaborative  
projects

Forum  
discussions

Videos

Figures

Infographics

Assessments

Study guides

# ACTIVITY: WHICH OF THE FOLLOWING DO YOU DESIGN MORE OFTEN?

**Lecture slides**

**Learning objectives**

ACTIVITY: WHICH OF THE FOLLOWING DO YOU DESIGN MORE OFTEN?

**Assessments**

**Rubrics**

# S.M.A.R.T. LEARNING OBJECTIVES



**Specific** – it focuses on the “scientific methods”



**Measurable** – “describe” and “provide examples” are measurable and observable indicators



**Achievable** – this is appropriate for an introductory level course



**Result-oriented** – it focuses on the result (describe/provide examples) rather than the process



**Time-bound** – students know that this is a skill they should master by the end of this unit



# RUBRICS

---

An explicit set of criteria for assessing work

---

Improve students' ability to include required elements of an assignment

---

Convey timely feedback to students

---

Reduce grading time

---

Increase objectivity and reduce subjectivity

---

Allow for consistency in grading when multiple graders are involved.

# CLAUDE AI

- Free version available
- Accepts PDFs
- Revise / redesign existing documents
- Rewrites in format of your choice
- Adapts to your prompts
- Great tool in conjunction with other AI tools



Claude.ai



# EXAMPLE 1: CLAUDE AI GENERATED LEARNING OBJECTIVES BASED ON LECTURE SLIDES

- Explain how water's polarity and hydrogen bonding give rise to its unique properties.
- Describe how water dissolves ions and other polar molecules, and excludes nonpolar molecules through the hydrophobic effect.
- Define and explain the thermodynamic concepts of enthalpy, entropy, and free energy.
- Contrast the concepts of thermodynamics and kinetics, and explain their relevance to biochemistry.
- Calculate the free energy change for biochemical reactions using standard free energy data and the concentrations of reactants and products.

## EXAMPLE 2 : RUBRIC DESIGN

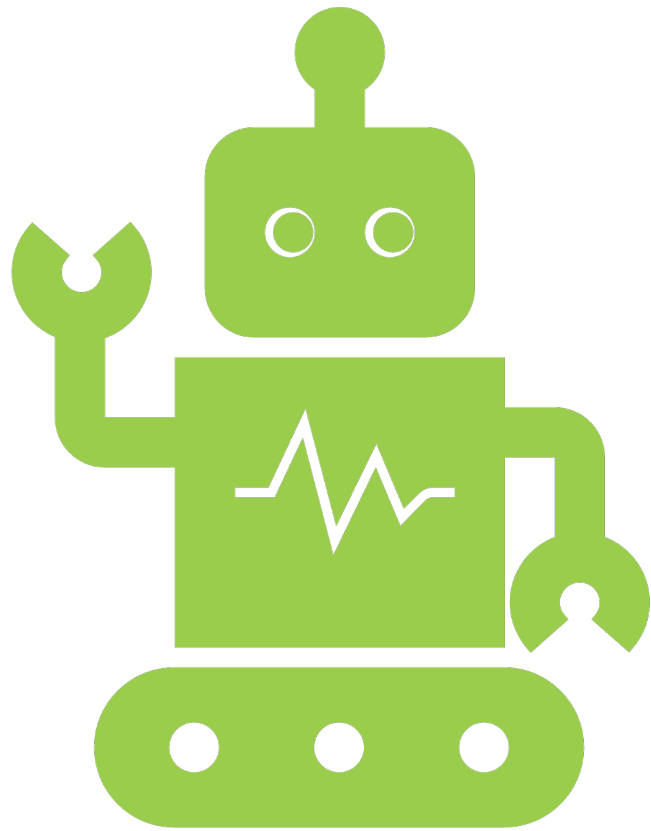
**Question:** You are purifying a protein ... stabilized by a disulfide cystine crosslink. You are using size exclusion chromatography (SEC), ..... in the presence of beta-mercaptoethanol (BME). Do you expect the protein to elute faster, or more slowly, or at the same rate? Justify your answer using a description of the matrix (beads) that are used to perform SEC. (10 pts)

### Grading Criteria:

- The protein should elute more slowly. (2.5 pts)
- BME destroys the cystine crosslink .... monomers. This protein will be smaller in size than the protein dimer. (2.5 pts)
- The smaller protein ... cause the proteins to take a longer time to pass through the column. (5 pts)

# CLAUDE AI GENERATED ANALYTICAL RUBRIC

Criteria	2.5 points	1.5 points	0.5 point	0 point
Elution rate prediction	Correctly predicts that the protein will elute more slowly in the presence of BME than in its absence.	Partially predicts that the protein will elute at a different rate in the presence of BME, but does not specify whether it will be faster or slower.	Mentions that the elution rate of the protein will change in the presence of BME, but does not make a clear prediction.	Incorrectly predicts that the protein will elute at the same rate or faster in the presence of BME.
Effect of BME	Correctly identifies that BME breaks the disulfide cystine crosslink of the protein dimers, creating protein monomers.	Partially identifies that BME affects the protein structure, but does not specify how or what kind of bonds are involved.	Mentions that BME has some effect on the protein, but does not identify what kind of effect or what kind of structure is affected.	Incorrectly identifies that BME has no effect on the protein or has an opposite effect.
Matrix description	Correctly describes that the matrix consists of porous beads that allow smaller proteins to enter and larger proteins to bypass.	Partially describes that the matrix consists of beads, but does not mention their porosity or how it affects protein separation.	Mentions that the matrix is used for SEC, but does not describe its composition or function.	Incorrectly describes that the matrix is not composed of beads or has a different function than SEC.
Relationship between protein size and elution rate	Correctly explains that smaller proteins elute more slowly than larger proteins in SEC.	Partially explains that protein size affects elution rate, but does not specify how or why.	Mentions that protein size and elution rate are related, but does not explain how or why.	Incorrectly explains that protein size and elution rate are not related or have an inverse relationship.



USE GENERATIVE AI –  
BUT BEWARE OF  
GETTING HOOKED!