

AI-Generated Flashcards for End-of-Semester Exam Review

Course Subject	CS1800: Discrete Structures
Student Level	Undergraduate
Number of Students	Approximately 500 enrolled
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What the Instructor Did

The instructor used a generative AI tool to produce flashcard sets covering core topics from CS1800: Discrete Structures, a theory-based undergraduate computer science course. The flashcards were designed to help students prepare for the course's end-of-semester quiz and final exam. Teaching assistants — primarily undergraduate students — reviewed the AI-generated cards for accuracy and flagged any errors or gaps before the materials were used in review sessions. The instructor and TAs then led up to three in-person review sessions where students engaged with the flashcards to practice and consolidate course material.

Purpose

The primary goal of this activity was to provide students in a large enrollment course with targeted, low-stakes review materials ahead of high-stakes end-of-semester assessments. Generating practice problems and review cards manually at scale is time-intensive; using a generative AI tool allowed the instructor to produce a substantial set of materials without proportionally increasing preparation time. A secondary goal was to evaluate whether AI-generated flashcards could be produced accurately and efficiently enough to recommend the workflow to other faculty teaching large courses. Teaching assistants served both as reviewers of AI output and as facilitators of student review, gaining experience evaluating AI-generated content for disciplinary accuracy.

Assessment

Student engagement with the flashcards was assessed informally through instructor and TA observation during the review sessions. No grade was assigned for participation. The effectiveness of the flashcards as review tools was evaluated based on the instructional team's

observations of student engagement and comprehension during the sessions. In parallel, the ease and accuracy of the AI-generation workflow was itself under evaluation, with the aim of determining whether the approach is scalable and replicable for other instructors in similar large-enrollment courses.

Faculty Reflections

In this kind of course, students benefit from all the practice they can get – and they frequently ask for it, too. I used Claude to generate flashcards, and I intentionally used a process as lightweight as possible, so that I could recommend this to other faculty without increasing their workload. I gave Claude the link to my course website, and asked it to download all of my notes and turn them into flashcards for the upcoming final exam (which was cumulative). My notes were handwritten and on the website as PDF documents. It did a good job putting them together, and coming up with variations on initial questions I'd already used. I did have to make some edits, but it was quite a bit faster, and still effective, than doing it myself.

Step-by-Step Directions

Note: These directions are written for an instructor replicating this activity. Adjust tool names and course-specific details as needed.

Step 1	Identify the core topics and learning objectives you want students to review. For CS1800, this included numeric bases, predicate logic, combinatorics, set theory, proof by mathematical induction, and graph algorithms.
Step 2	Open your chosen generative AI tool (e.g., ChatGPT, Claude, or another chatbot). Prompt it to generate a set of flashcards for each topic area. A sample prompt might be: "Generate 10 flashcard pairs (term/definition or question/answer) covering all topics on this website."
Step 3	Review the AI-generated flashcards yourself, or distribute them to TAs for review. Check each card for accuracy, appropriate difficulty level, and alignment with how the topic was taught in your course. Flag or remove any cards with errors, hallucinations, or content that does not match your course framing.
Step 4	Revise flagged cards manually or re-prompt the AI tool to regenerate them. Confirm the final set with your TAs before use.
Step 5	Distribute the flashcard sets to students ahead of the review sessions, or present them during the sessions. The flashcards were shared with students in review sessions led by Teaching Assistants. The goal was to be seamless for students; they should feel they're just going to any other review session and now they have additional resources they weren't expecting.

Step 6	Lead the review session(s) with TAs. Use the flashcards as the basis for practice, discussion, or retrieval activities. Observe student engagement and note where students struggle or succeed.
Step 7	After the review sessions, reflect on which cards were most useful and where the AI-generated content needed the most revision. Use these observations to refine the workflow for future semesters.