

## Sample Responses to the Final Exam Questions

### Sample Question

Using concepts from system analysis/cognitive systems engineering redesign this classroom (111 Boucke) to be more effective for a) the student and b) the professor. Provide your design rationale and integrate use of new information technologies we have discussed (as appropriate).

### Sample Response 1

For redesigning this classroom from a cognitive engineering standpoint, the most important factor to consider would be to avoid building the wrong system right, and making a system that didn't help, it only makes things worse, as Wards says in his commentary on "How are artifacts shape cognition and collaboration". An important starting point would be interviewing all the IST students and professors to get as much information as possible to properly have the problem in the classroom represented.

As a student in the room, I know that is a large problem with the students' environment with the laptops in front of each student. I believe a system should be made that would alert the professor via his laptop, when a student is logged on to one at the laptops. This would allow him to help keep the student's attention.

Another problem I see in the room is the location of the projector in reference to where the professor stands to talk. The light from the projector can really distract a teacher or other speaker when he/she is trying to concentrate on the lecture. I think moving the projector closer to the display screen would make this problem non-existent, because the projection angle is not through the speaker's line of vision.

As for new technologies to be put in the room, it would probably be helpful if each student's seat area would be able to sense the mood/condition of the whole class. This would allow the professor to make "on the fly" changes to help his students interested and awake. This is very important for a learning environment. I think these few changes would really make the room better for its purpose, but as mentioned before. It is important not to take away from any learning by having a bad, un-useful system.

One example at that would be if the professor would be paying too much attention to his "mood indicator" instead of what he is saying in lecture!

Oh, I would also have the system disable the alarms during class – they are a real distraction when accidentally tripped.

*(Please continue to Page 2 for Response 2 →)*

## **Sample Response 2**

When students enter a classroom to receive an education, the process of learning is analogous to that of a system. The students receive input – videos, lectures, presentations, readings, and handouts – and process this information. Their output is evaluated by a professor (or hard-working TA) and assigned a grade. Through cognitive engineering, the system in Boucke 111 can be improved for the student and evaluator. First, the problems of each group need to be addressed. What prohibits the students from learning efficiently? What keeps the professor from teaching more effectively? In 111 Boucke, it's clear that the laptops are often abused. What's the point, however, of investing in laptops if only two students out of 50 can use them each class? A system could be developed for professors to permit certain applications to be run. If a professor wants his students working on spreadsheets or word-processing, then only give them access to Word and Excel. If they should only be on the Internet, allow professors to enable only Internet Explorer. This would solve the highly abused laptop situation. Next, professors often have the trouble of keeping their students' attention. There are many ways IST could help this problem. The best solution, in my opinion, is to keep the professor's lecture as the most important information to the student at that time. First, seating should be changed so the professor is equidistant to all students. Next, lectures should be delivered through some type of technology medium -- PowerPoint, smart board, laptops, etc. This will keep students interested in the material. A final, and this is the most important, development is to constantly evaluate and re-evaluate the classroom. As cognitive engineers and analysts do, developers of the classroom should constantly take feedback from the users to maintain a high-quality room. As analysts did with the heads-up display, analysts of the classroom need information back from the students and teachers to keep the room efficient. Going back to the idea of a classroom as a system, 111 Boucke could be redesigned to make it an efficient, effective system what combines the users, technology, and information.