Things go wrong in so many ways that you can’t imagine,” sociologist Charles Bosk told his class. He speaks softly, with a touch of wry humor that’s often missed by students, and sometimes he sips from the silver can of Diet Coke that is his constant companion.

“Accidents are normal, but we don’t know their frequency nor do we know their consequences.”

On Tuesday afternoons last fall, 18 freshmen sat at tables arranged into a U-shape to consider the intricacies of Bosk’s claim. The freshmen seminar on Mistakes, Errors, Accidents and Disasters reviewed mishaps big and small – from the loss of a single life due to medical error to big, public-spectacle tragedies like the Challenger explosion and large-scale catastrophes like the leakage of toxic fumes from a pesticide plant that killed thousands in Bhopal, India.

“Accidents are normal,” Bosk says of the fast-moving, interlocking parts of technology and people that make up social systems, “but we don’t know their frequency nor do we know their consequences. We just know that anything this complicated has built into it some sort of error rate. It may be infinitesimally small, but it can have large consequences.”

This afternoon, the class is looking into how a couple of F-15 fighters managed to shoot down two Black Hawk helicopters that had permission to enter the No Fly Zone overseen by an AWACS surveillance plane in Iraq. All 26 peacekeepers onboard the helicopters were killed in the 1994 incident. The students pass around plastic tubs of Trader Joe’s Crispy Crunch Oatmeal Raisin Cookies and Triple Ginger Snaps that the instructor had supplied.

“Was the system broken before the shoot-down?” Bosk asks. Most in the class say it was, so he presses the point. “Is it possible that a broken system could function and even be hailed as a model of interservice teamwork?”

Together, the group probed the training, the values and views of pilots and technicians, the myriad operational protocols, the shortfalls of even the best-written plans, the pressures for maximum efficiency and all the unseen warnings of breakdown that piled up and the decisions that were made at the breakneck speed of high-performance jets.

“Shouldn’t they have seen the obvious flaws from the beginning?” states Jenny Ball.

“How would they know the system was broken unless something happened?” Ben Cirlin shoots back.

“Why fix something that’s working?” Al Moran adds, noting that the no-fly system had operated without incident for three years.

“If I were forced to pick a day when the system failed,” Bosk observes, “I’d say it was the day the transponder code for identifying friend or foe was changed.”

“Aren’t there a lot of places we can pinpoint like that?” Kevin Rosenberg protests.

“Probably,” says Bosk, “but that’s my favorite.”

In the military’s fast-paced, high-risk, high-tech world, a string of harmless mishaps can sometimes line up and unfold suddenly into fiery debacle. In his recounting, Colonel Scott Snook, author of Friendly Fire, today’s reading, concludes that everyone’s actions were by-the-book and that the shoot-down was a “normal accident” that occurred in an otherwise highly reliable organization.

“There’s something tragic about reading this account,” Bosk comments, “when all the different pieces click into place, and we know now what everyone involved didn’t know then – that those helicopters were doomed.”

Carelessness? System error? Just plain bad luck? “I think it’s one of those puzzles that I’ll never quite figure out,” Bosk says of the shards of disaster that, when pieced together, make a picture of how things go awry. “This is complicated, interesting and important material that’s worth thinking about in a million different ways. I will have failed if these students leave and say this is how you prevent errors and disasters, and these are the answers.”

“I’m surprised by how many open-ended questions there are,” Mike Eckert remarks near the end of class.

—PETER NICHOLS