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FOR ENGINEERING AND SCIENCE

# The Under-Prepared Student

## Year

2002

## Description

This case focuses on a professor's responsibility to students who may come to class without the expected level of preparation.

## Body

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## Part 1

After the third week of fall classes, Jim Shipmann, a junior majoring in chemistry, goes to the office hours of the professor who is teaching his class, Quantitative Analysis 340.

"Hi, Dr. Franklin. I am having a lot of trouble trying to figure out Problem 3 in the homework for this week. I basically understand how to do the problem, but I can't get the answer in the back of the book," Jim says. Franklin answers, "Let me see what you have, and we can work through an example together." After spending 45 minutes with Jim, it becomes clear to Franklin that Jim has some fundamental problems with algebra that are interfering with his mastering the chemistry involving complex equilibria.

After the meeting, Franklin checks Jim's records to see whether he has completed the required prerequisite calculus classes normally taken by chemistry majors in their first two years. To his surprise, Jim took the normal four-semester sequence and received above average grades.

The following week, Jim comes to Franklin's office hours with more questions. His difficulties hinge on basic algebra problems that are interfering with his fully understanding the relevant chemistry. After the second marathon meeting with Jim, Franklin realizes that although he probably will be able to pass the class despite his lack of math skills, Jim certainly will not come out of the course with the level of understanding that would be expected of a chemistry major. Furthermore, Franklin has not been able to help other students who have come by during the office hours, waited, and then left without asking their questions because he has spent so much time working with Jim.

## **Discussion Questions**

1. What are Franklin's responsibilities to Jim and the other students in the course?
2. What are possible courses of action that Franklin could take to address Jim's situation?
3. Does it matter whether or not Jim is a chemistry major?

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## **Part 2**

After considering Jim's situation for a couple of days, Franklin decides to talk with his colleague, Dr. Sarah Winters, about what he should do regarding Jim's lack of basic math skill. "I have a student in my class who is working hard," Franklin says, "but he has little understanding of basic algebra. He will probably pass the course, but he will not understand the chemistry we are learning, I am thinking about suggesting that he drop the class and take a remedial math course." After discussing the possibilities, Franklin and Winters agree that Jim must be told that he is lacking some fundamental math skills. They come up with three alternate plans to remedy the deficiency. Franklin then requests a meeting with Jim.

Franklin opens by saying, "Jim, the reason I asked you to come for this meeting is that we need to discuss a problem that I think you have with math. I think you have the potential to be a great chemist, but you seem to be having some trouble with basic algebra manipulations that is really interfering with your chemistry". Franklin goes on to tell Jim that there are at least three reasonable scenarios that could take care of the problem: 1) Jim could drop the quantitative analysis class and take another math course, and then re-enroll in 340 the following term. 2) Jim could get an algebra book and teach himself math. 3) Jim could hire a tutor to help him with algebra.

Franklin says, "It is your decision. I will help you however I can. My suggestion is that you go to the library and see what you can find that would serve as a crash course in algebra. This will be a lot of extra work for you, but it will really pay off for the second half of the semester. There are still two weeks left before the final course drop day. Think about it, and let's talk again next week."

## **Discussion Questions**

4. Does Franklin have an obligation to tell Jim that he has a fundamental gap in his understanding of math?
5. Whose responsibility is it to teach Jim, a junior in college, basic algebra? Should Franklin offer to teach Jim basic algebra?
6. Is it appropriate for Franklin to talk to Winters about Jim's situation? Should Franklin tell Winters the name of the student they are discussing?
7. Should expectations for understanding differ for students who are chemistry majors rather than nonmajors (i.e., is simply passing the class sufficient)?

## **Notes**

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