Balliol College Computer Science: Professor Tom Melham – Video transcript

The tutor, Professor Tom Melham, is seated, facing the camera. The tutor's name and course subject are shown the first time they appear. The tutor answers the questions that are displayed on screen.

>>PROFESSOR TOM MELHAM (PROFESSOR OF COMPUTER SCIENCE AND FELLOW AND TUTOR IN COMPUTATION): I'm Tom Melham. I'm the Tutor in Computer Science at Balliol College. I'm also a professor of Computer Science in Oxford's Computer Science Department. My scientific specialty is the design of semiconductors, which are the little electronic chips that are in your mobile phone, your laptop, and all the electronic gadgets we use every day.

[Question displayed on screen:]

What qualities do you seek to develop in your students?

>>PROFESSOR TOM MELHAM: We're looking for people who have a very deep interest in the subject, who are very interested in Computer Science. It's a very broad field so there are many things to be interested in, you don't have to be interested in all of them, but someone who has a passion for pursuing that knowledge through a great education in the basics of Computer Science and advanced topics.

[Question displayed on screen:]

What type of work do you give students to prepare for a tutorial?

>>PROFESSOR TOM MELHAM: The lecturers who are teaching the lectures in the university will set problem sheets that the students will work on before they come to a tutorial. A problem sheet will have a number of technical problems that they have to solve based around the content of the lectures that are being put on at that time. So, the students will be doing those problem sheets in advance, before they come to the tutorial and then we'll discuss the problems in the tutorial and of course, if there are opportunities to go beyond what's in the tutorial sheet we'll be finding other problems for them to work on. Computer Science is basically, a doing subject so it's something where you have to do the work, write programs, do mathematical proofs, solve problems, and so all of the preparation for tutorials is that.

[Question displayed on screen:]

How are tutorials structured?

>>PROFESSOR TOM MELHAM: My tutorials always start with a question; "what is the hardest part of the tutorial sheet that you've been working on as a student?" We work backwards from the things you found most challenging to the things that were easier because of course, the biggest learning opportunity is in talking about a problem or something which you couldn't easily do or you had some challenge with but, beyond that I would say there's always two things going on in tutorials. The first one is, dealing with the material that's in the tutorial sheet, the content of that material, making sure that people really understand it or going beyond it and deeper and so on, what's in the problem sheet. There's a sort of meta-level thing going on which is, learning how to learn and learning how to become an independent learner so simply, me simply producing the answer to the problem doesn't really teach anybody how to solve the next problem that comes along. So, we'll always have this mixture of, what's the content of the problem we're looking at? And, also do you have the intellectual tools or the skills to solve all such problems when they come in the future?

[Question displayed on screen:]

How do you explore ideas with students?

>>PROFESSOR TOM MELHAM: We'll start from the starting point of what's in the tutorial sheets and what's in the lectures. Depending on the interest of the student, I would take them through things that say aren't covered directly in the course but, go deeper or have more connections to other aspects of Computer Science or have some fundamental principle that needs to be amplified and so we will do that by giving them extra things to read, say in the vacation and having a discussion about those.

[Question displayed on screen:]

What do you enjoy about conversations with students?

>>PROFESSOR TOM MELHAM: Well, the thing I enjoy the most is when we have a sort of "aha!" moment together, where the student has gone from a partial grasp of a topic or a problem to seeing it in depth and having complete mastery over that particular concept or idea and so, where they've taken a sort of step change in their understanding of that part of the subject. That's always tremendously enjoyable to observe.

[Question displayed on screen:]

How do students know they are progressing on the course?

>>PROFESSOR TOM MELHAM: When we look over the students answers to tutorial sheets, they will they will obviously be told what they're getting right and where they could improve and so, they'll be getting immediate feedback in every tutorial on how they're doing on the material of that tutorial. In addition to that, this college and many others have internal mock exams and these are sat at the beginning of each term by the students and they're marked very carefully to reflect the kind of marking that would be on the university exams and there they can get a sort of numerical measure of you know, how well they would be doing at that stage of preparation before the exams and that's a good measure of how well they'll be doing on the exams at the end of the year.

[Question displayed on screen:]

What is the best thing about teaching at Balliol?

>>PROFESSOR TOM MELHAM: The thing I love about teaching at Balliol is giving motivated, good students a chance to get a truly deep and meaningful education in my subject.

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