



# Dr. Teng Cao

The academics selected to teach on the Girton Summer Programmes all have experience in teaching at Cambridge, whilst also contributing to leading research in their fields. One of these is Dr. Teng Cao, who teaches the Jet Engine course. We asked Dr. Cao about his thoughts on the Engineering Summer Programme.



## **How do you think studying in Girton and Cambridge affects the students?**

Cambridge is unique, in terms of education. It's good for them to come and experience something different, as well as study under the teachers who teach Cambridge students. They get to know Cambridge and the Cambridge system, which helps them if they wish to pursue further study here. At Girton, we have a strong background in engineering.

## **Do you think the varying academic backgrounds of students affects their learning experience?**

Students each year come from a variety of majors; some have an engineering background and many of them are computer scientists, or physicists, or mathematicians, with different backgrounds. They can view the same problems from different aspects, which is very interesting. The area can be related to social problems, like environmental and social impacts, like noise, emissions, safety more than the efficiency of the jet engine, which becomes an important aspect of jet engine development. You can see this background from the questions they ask.

## **How do you think the students benefit from such a short, intensive course?**

I would call this making the surface larger rather than digging into the roots. For example, you can't look at four topics in-depth, but you might choose one to follow on in research or industry related to it. You have to find out what you like. I remember a mentor, when I was an undergrad, telling me that university is all about finding your interest. Because many people, after school, don't know what they're interested in. When students come here, we hope to inspire them or help them find an interest.

## **Tell us a little about what students may experience in your Jet Engine course.**

Every year it changes and improves. I start by telling a story about the jet engine – The Second World War and Frank Whittle – and some of the cool applications of it. I'm bringing more experiments to them, bringing in real turbochargers and letting them de-assemble and re-assemble them.

## **Why do you think studying jet engines is so important?**

Turbomachinery will be a crucial component of the energy sector, including transportation and energy production, for the foreseeable future. Understanding the interaction between fluid dynamics and turbomachinery will keep improving the machine in terms of efficiency, safety, and environmental friendliness, which will have a significant contribution to building a sustainable society.

Dr. Teng Cao has taught the Engineering Summer Programme's module on 'The Jet Engine' since 2018, and has much experience teaching Cambridge first and second year Mechanic students, first year Thermofluids students and third year Compressible Flow students. Until September 2021 he was a Research Associate at the Whittle Lab, and MHI Senior Research Fellow and College lecturer at Girton College. He earned his Ph.D. from Cambridge and has authored and co-authored over a dozen research papers, including improved hierarchical modelling for aerodynamically coupled systems and radial turbine rotor response to pulsating inlet flows.

