Measurement Techniques in Fluid flow and Heat transfer

For engineers and scientists who want to understand experimental measurements in fluids, this course can give you the gist of the subject in a quick and efficient way.

ABOUT THE COURSE

Experiments in fluids are cool! And they can be hot too.

How do you measure velocity, pressure, and temperature? Which parameters can you measure accurately? How can you use lasers to measure velocity?

In this course we will discuss the need for experimental measurements in fluid mechanics and heat transfer, the challenges involved, and how to choose the best method for each application. You will learn about commonly used methods to measure the flow of gases and liquids. You will also learn about methods to measure heat transfer, which is relevant for cooling of high temperature parts in small and large engines for power generation.

The course will cover different intrusive and non-intrusive methods for the measurement of key parameters such as pressure, velocity, temperature, and will highlight the fundamental phenomena on which the different measurement techniques are based. The importance of reliable experimental measurements, and measurement uncertainty and repeatability will also be addressed in the course.

LEARNING OUTCOMES

- Describe commonly used fluid flow and heat transfer measurement techniques and compare the fundamental phenomena behind these techniques
- Argue for the importance of experimental measurements and measurement uncertainty and repeatability.
- Explain the challenges and limitations of different measurement techniques and rank parameters in order of measurement accuracy.
- Select and motivate the most suitable measurement technique for a specific application within fluid flow and heat transfer.

A MODERN UNIVERSITY AT THE HEART OF SOCIETY

Mälardalen University (MDH), was founded in 1977 and has 16 000 students and 1000 employees. MDH emphasises strong links between education and research, with value and applicability as key concepts.

MDH offers our students knowledge, tools and possibilities to create their own future. Active cooperation with business and society is the core of the University´s endeavours, and we continuously takes new steps to achieve the vision of a strong MDH – the co-producing university.

TEACHER - IOANNA ASLANIDOU

I am an assistant professor within the SOFIA research group at the Future Energy Center. My research focus is on boiling heat through experimental studies, the use of artificial intelligence in fluid mechanics research, and the development of learning systems and on-line diagnostic concepts for process industry.

I hold a DPhil in Engineering Science from the University of Oxford, UK, for my research on combustor and turbine aerothermal interactions in gas turbines with can combustors. I obtained a MSc in Thermal Power from Cranfield University, UK, and a Dipl.-Ing. in Mechanical Engineering from the Aristotle University of Thessaloniki, Greece.

ioanna.aslanidou@mdh.se
+46 21 10 14 23

SPECIFICATIONS

Start date: 2 September, 2019
End date: 10 November, 2019
Study pace: 50%
Main area: Energy Engineering
Level: Advanced
Language: English
Credits: 2.5
Fee: May apply for international students

ENTRY REQUIRMENTS

120 credits of which 90 credits engineering or natural science and 7.5 credits mathematics or similar knowledge. In addition English course A/English course 6 is required.

CONTACT

lifelonglearning@mdh.se
mdh.se/utbildning/livslangtlarande

MÄLARDALEN UNIVERSITY
SWEDEN