

# Nanotechnology engineering at the smallest scale possible

## What is Nanotechnology?

The forefront of much modern engineering and science research is at the scale of the smallest devices currently possible - in the range of nanometres. For engineers, the advantages of such small devices include increased speed and packing density, and novel functionality. For the scientist, working on such small scales reveals a range of exciting and unexpected fundamental phenomena.

## Why is Nanotechnology important?

Most benefits of nanotechnology depend on the fact that it is possible to tailor the essential structures of materials at the nanoscale to achieve specific properties, thus greatly extending materials science.

- Nanoscale transistors that are faster, more powerful, and increasingly energy-efficient.
- Solar panels incorporating nanotechnology are more efficient in converting sunlight to electricity. Nanostructured solar cells are cheaper to manufacture and easier to install, since they can use print-like manufacturing processes and can be made in flexible rolls.
- Research enablers such as microfluidic chip-based nanolabs capable of monitoring and manipulating individual cells and nanoscale probes to track the movements of cells and individual molecules.

## How is Nanotechnology studied at UC?

By enrolling in an Electrical and Electronic, Mechatronics or Computer Engineering degree and choosing the specialised courses in this subject. You get to apply gained knowledge through highly practical yet extremely enjoyable projects involving electronic, mechanical and fluidic micro and nanoscale devices.

- Learn about cutting-edge electronic materials and gain a fundamental understanding of advanced semiconductor device design and processing techniques.
- Fabricate your own solar cell and get trained on the tools used to make integrated circuits, such as lithography and pattern definition technologies.
- Apply your skills in final year projects designing the next generation of sensors and actuators.

