



## Power Electronics Devices Design and Manufacturing Training Courses Eight Modules Virtual Manufacturing Based Training Course

### Background

In the framework of the Innovate UK funded project “Virtual Manufacturing Based Power Electronics Design and Manufacturing Training Courses,” in collaboration with NMI and Synopsys, Semiwise is developing training course for the UK power electronics industry. Power electronic devices are in the heart of all power converter applications: power supplies, motors and drives, electric cars, solar panels, wind turbines. Better power electronic devices can increase the mileage of the electric cars and the efficiency of the renewable energy sources. For the first time this course is entirely based on ‘virtual manufacturing’ concepts using the Synopsys TCAD tools, which are not only perfectly suited for the design and optimization of power electronics devices but essential for the corresponding teaching.

All course modules are complemented by TCAD laboratories using the industry leading TCAD simulator: Sentaurus Process and Device.

### Target students

The course is designed for individuals at graduate level with no prior knowledge and experience in power electronic. It targets:

- Conversion from other engineering degrees to semiconductors and Power Electronics.
- Training of new recruits in the semiconductor and electronic design companies.
- Upskilling of existing staff.

The course is suitable for people interested or involved in both power electronic devices manufacturing and Power Electronic circuit and systems design.

### Modules

**Module1:** Semiconductors and their properties

**Module2:** Building blocks of semiconductor devices

**Module3:** Power electronics devices (PEDs).

**Module4:** TCAD based optimisation of PEDs.

**Module5:** Semiconductor fabrication processes.

**Module6:** Process integration.

**Module7:** TCAD based process integration/optimisation.

**Module8:** DTCO for PED.

### Laboratories

The learning objectives and outcomes for each module are further enhanced by a TCAD laboratory where students will be able to run their own simulations and understand better the intricate details of Power Electronic device operation and manufacturing.

### Delivery

At the initial stage this will be a face-to-face delivery course tutored by the world leading semiconductor expert Professor Asenov and tutors personally trained by him. Locations will include CMOS manufacturing and design companies’ premises or regions with high Power Electronics manufacturing and design activities in UK, Europe and worldwide.

We are planning also web based delivery to start at the end of this year.

### Further Information

For further information and expression of interest please contact Dr. Ismail Topaloglu [ismail.topaloglu@semiwise.uk](mailto:ismail.topaloglu@semiwise.uk),

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