



Microwave Filters: Technologies and Practical Design

Monday 27 January– Friday 31 January 2014

Objectives

This intensive course is presented over five days and presents a systematic progression of topics from specification and theoretical synthesis, CAD-assisted design and practical manufacturing techniques for microwave filters operating in the frequency ranges of typical radar systems. It is presented as a CPD course for engineers with 5 CPD credits. It also forms part of the Taught Master's in Radar Engineering at UCT as a 20 credit course with an exam and submission of a design task.

Course Content

- How to select filters for various applications according to specifications, frequency ranges, trade-offs between performance and size.
- Filter technologies: planar filters on conventional substrates, multilayer design and packaging techniques (LTCC and LCP) including quasi-lumped element filters, machined waveguide filters and substrate integrated waveguide, and monolithically integrated filters.
- Design methods for narrow-band, wideband and multiband filters.
- Manufacturing techniques, design-for-manufacture considerations, tolerance analysis and repeatability.
- Full-wave EM solvers and design tools for filter design and optimization.

Course Lecturers

Riana Geschke is an Associate Professor at the University of Cape Town where she teaches courses in Electromagnetics and Microwave Systems. Her group's research activities are focused on single and multilayer planar filters, electronic reconfigurability and filters based on transmission lines with special properties. She participated in the FP7 Marie Curie IRSES MultiWaveS project which focused on Electronically Reconfigurable Multiband Devices and has published a number of journal papers and conference presentations in this field.

Tinus Stander is a Senior Lecturer at the Carl and Emily Fuchs Institute for Microelectronics, Department Electrical, Electronic and Computer Engineering, University of Pretoria. He heads the mm-Wave Research Laboratory at CEFIM, where he leads research activities on microwave and mm-wave devices on-chip and on hybrid media. Apart from his role in academia, Dr Stander is also a practicing engineering consultant, where he specialises in compact RADAR and EW front-end devices and subsystems.



Continuing Professional Development Programme

Faculty of Engineering & the Built Environment

Course Information

Who should attend?

This course will be of benefit to all who require a solid foundation in microwave filter design, from basic concepts to advanced topics in filter synthesis and cutting-edge filter technologies. Students will be exposed to world-leading commercial EM software for the analysis of filter designs.

Format

The course is presented in an intensive five day format, which includes lectures and hands-on practical sessions. Following the course, the students enrolled for the Radar Master's Programme will write an exam and submit an assignment.

Cost

The fee for the course will be R10 000 for CPD participants. This fee includes a set of course presentation notes and lunch vouchers.

Certificates and CPD Points

A certificate of attendance will be awarded to CPD participants. Participants need to attend 80% of the lectures to qualify for an attendance certificate.

CPD participants can also request a formal university transcript, which will show this course as part of a Professional Development Career.

Please note: If you are interested in attending this course for credit purposes, you will need to register for the Masters Programme or as an occasional student. If you attend, or successfully complete the course as a CPD participant, credit cannot be claimed in retrospect.

Venue

ERC Seminar Room, 6th floor, Menzies Building (Upper Campus), University of Cape Town

Date and Time

Daily lectures: 08:00 – 17h00

Monday 27 January 2014 – Friday 31 January 2014

Assignment deadline (not for CPD participants) – 14 March 2014.

Exam (not for CPD participants) – date in March to be finalized during the course presentation week.

Applications and cancellations (for CPD participants)

Application forms can be found on the website www.cpd.uct.ac.za/applications/

In order to ensure a place on the course applicants are requested to send a signed registration form to the course administrators: Heidi Tait or Sandra Jemaar

Confirmation will be sent on receipt of an application form

Applications close on 11 January 2014

Cancellations must be received one week before the start of the course, or the full fee will be charged.

For further enquiries, please contact:

Heidi Tait or Sandra Jemaar

CPD Programme

EBE Faculty

University of Cape Town

Phone: 021 650 5793

Fax: 021 650 2669

Email: ebe-cpd@uct.ac.za

For Masters or occasional student registration, please contact Ms Nicole Moodley at nicole.moodley@uct.ac.za or 021 650 2795.