

Basic details

UID		Cohorts covered	Earliest cohort Latest c
Long title	Analogue Integrated Circuits and Systems		
New code	ELEC70043	New short title	
Brief description of module (approx. 600 chars.)	The aim of this module is to provide a general overview of analogue integrated circuits and systems in CMOS and Bipolar technologies with particular emphasis on high frequency circuit design for wireless products. 213 characters		
Available as a standalone module/ short course?	No		

Statutory details

	ECTS	CATS	Non-credit	HECOS codes
Credit value	5	10	N	
FHEQ level	7			

Allocation of study hours

	Hours	
Lectures	20	
Group teaching	0	<i>Incl. seminars, tutorials, problem classes.</i>
Lab/ practical	0	
Other scheduled	2	<i>Incl. project supervision, fieldwork, external visits.</i>
Independent study	103	<i>Incl. wider reading/ practice, follow-up work, completion of assessments</i>
Placement	0	<i>Incl. work-based learning and study that occurs overseas.</i>
Total hours	125	
ECTS ratio	25.00	

Project/placement activity

Is placement activity allowed?	No
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Module delivery

Delivery mode	Taught/ Campus	Other	
Delivery term	Term 1	Other	

Ownership

Primary department	Department of Electrical and Electronic Engineering
Additional teaching departments	0
Delivery campus	South Kensington

Collaborative delivery

Collaborative delivery? **No**

External institution
External department
External campus

Associated staff

Role	CID	Given name	Surname
Module leader		Christopher	Toumazou
Topic leader		Pantelis	Georgiou
		0	0
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		0	0

Learning and teaching

Module description

Learning outcomes	At the end of this module, you will be able to: 1. Analyse different analogue circuits and architectures 2. Design different analogue circuits taking into account limitations and creating solutions to circumvent or resolve these. 3. Derive and apply the concept of current feedback OPAMPs. 4. Analyse and calculate integrated switched capacitor filters and continuous-time filters. 5. Explain and simulate the operation of A/D and D/A Converters and contrast different approaches.
Module content	Intuitive methods for IC Design; Voltage and Current Source IC Designs; CMOS building blocks, current-mirrors, amplifiers, differential pairs; CMOS Op-AMP Design & Specification; Design case study of typical CMOS IC op-amp; High Performance OP-AMP Architectures; Current Feedback OP-AMP Architectures; Introduction to integrated switched capacitor filters and continuous-time filters; A/D and D/A Converters.
Learning and Teaching Approach	This module teaches an intuitive approach to system design and applications. Teaching is in the form of lectures with problem sheets that are solved in classes.
Assessment Strategy	The module is assessed by a 3-hour, closed book, written examination. MSc students will have one replacement question, specific for Level 7;
Feedback	You will be provided with feedback on problem sheets in the following-up lecture and written feedback on exam example answer sheets.
Reading list	1) Gregorian, R & Temes, G.R: Analog MOS Integrated Circuits for Signal Processing, John Wiley and Sons, 1986. 2) Geiger, R.L., Allen, P.E. & Strader, N.R: VLSI - Design Techniques for Analog and Digital Circuits, McGraw Hill, 1990. 3) Toumazou, C., Lidgey, F.J. & Haigh, D.G.: Analogue IC Design: the current-mode approach, Peter Perigrinus, 1990.

Quality assurance

Date of first approval **February 2022**
Date of last revision Jun-23
Date of this approval **July 2025**

Office use only

QA Lead
Department staff
Date of collection

Module leader

Prof Chris Toumazou

Date exported
Date imported

Notes/ comments

Assessment details

Grading method

Numerical

Pass mark

50%

Assessments

[illegible]

100%