

Basic details

UID		Cohorts covered	Earliest cohort Latest c
Long title	Radio Frequency Subsystems		
New code	ELEC70051	New short title	
Brief description of module (approx. 600 chars.)	This module aims to teach you the terminology, concepts and basic methods for radio frequency subsystems design. 113 characters		
Available as a standalone module/ short course?	No		

Statutory details

	ECTS	CATS	Non-credit	HECOS codes
Credit value	5	10	N	
FHEQ level	L7			

Allocation of study hours

	Hours	
Lectures	20	
Group teaching	11	<i>Incl. seminars, tutorials, problem classes.</i>
Lab/ practical	0	
Other scheduled	0	<i>Incl. project supervision, fieldwork, external visits.</i>
Independent study	94	<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 2	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		Stepan	Lucyszyn
		0	0
		0	0
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Learning and teaching

Module description

Learning outcomes	Upon successful completion of this module, you will be able to: 1. Apply the main architectures employed in RF systems. 2. Interpret subsystem specifications. 3. Calculate power link budgets. 4. Analyse circuits and subsystems using S-parameters. 5. Calculate gain, stability and noise issues in small-signal amplifiers. 6. Design impedance matching networks and filters.
Module content	Electromagnetic Spectrum; Applications of Microwaves and RF; S-parameters; Microwave Office; Vector Network Analyzer. Architectures; Subsystem Specifications; Power Link Budgets; S-parameters Analysis; Directional Couplers; Small-signal Amplifiers; Filters.
Learning and Teaching Approach	The module is taught through lectures.
Assessment Strategy	This module is assessed by a 3-hour open book written exam. In addition there are two coursework assignments (CAD simulation and technical paper).
Feedback	You will receive written comments on exam example answer sheets.
Reading list	Supplementary Reading:

[1] C. Poole, I. Darwazeh, and I. Darwazeh, Microwave active circuit analysis and design. Amsterdam;; Amsterdam; London : Academic Press Elsevier, 2015.
 [2] D. M. Pozar, Microwave and RF wireless systems. New York;; New York; Chichester : Wiley, 2001.
 [3] R. Ludwig and G. Bogdanov, RF circuit design : theory and applications, 2nd ed., International ed. Upper Saddle River, N.J. ;; Upper Saddle River, N.J. ; Harlow : Pearson Prentice Hall, 2009.

Background Reading:

[1] S. Lucyszyn, RFIC and MMIC design and technology. London :: London : Institution of Electrical Engineers, 2001.
 [2] S. Lucyszyn, Advanced RF MEMS. Cambridge :: Cambridge : Cambridge University Press, 2010.

Quality assurance

Date of first approval February 2022
 Date of last revision June 2023
 Date of this approval

Module leader Prof. Stepan Lucyszyn

Notes/ comments

Office use only

QA Lead
 Department staff
 Date of collection

Date exported
 Date imported

Assessment details

Grading method	Numerical
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Pass mark

50%

Assessments

[illegible]

100%