UNIVERSITÀ DI PISA

ELETTRONICA DEI SISTEMI WIRELESS

SERGIO SAPONARA

Academic year	2018/19
Course	INGEGNERIA ELETTRONICA
Code	308II
Credits	9

Modules	Area	Type	Hours	Teacher(s)
ELETTRONICA DEI SISTEMI WIRELESS	ING-INF/01	LEZIONI	90	FEDERICO BARONTI SERGIO SAPONARA

Obiettivi di apprendimento

Conoscenze
The course aims to guide the student to the advanced design of radio-frequency and microwave integrated circuits for consumer applications, health care, low power RADAR etc. To this end, the most advanced CAD tools will be presented by the instructor and directly used by the students to design and simulate the main blocks of the radiofrequency front end such as LNA, Mixer, Oscillator, filters etc.
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Modalità di verifica delle conoscenze
In the oral exam the student's ability to explain correctly the main topics presented during the course at the board will be assessed. In the laboratory report the student must demonstrate the ability to utilize a specific CAD tool (ADS) for RFIC design and simulation.
Methods:

- Final oral exam
- Laboratory report

Further information:
33% Laboratory Report (CAD design and simulation + report); 67% Oral exam
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Programma (contenuti dell'insegnamento)
Radiofrequency link dimensioning and system level considerations, integrated transceivers: available devices and technologies; design of BJT and MOS Low Noise Amplifiers, oscillators, mixer, PLL, power amplifiers; architectures for fully integrated wireless interfaces; CAD tools for RFIC design; examples of wireless integrated applications: radar on a chip, LNA with integrated antenna for millimiter waves.
Radiofrequency link dimensioning and system level considerations, integrated transceivers: available devices and technologies; design of BJT and MOS Low Noise Amplifiers, oscillators, mixer, PLL, power amplifiers; architectures for fully integrated wireless interfaces; CAD tools for RFIC design; examples of wireless integrated applications: radar on a chip, LNA with integrated antenna for millimiter waves.

Bibliografia e materiale didattico
Il seguente testo è raccomandato; altre fonti bibliografiche di Razavi e Voinigescu sono indicate durante il corso
Thomas H.Lee "The Design of CMOS Radiofrequency Integrated Circuits", Cambridge University Press, Second Edition, 2004
Inoltre verrà fornito materiale didattico dal docente

Indicazioni per non frequentanti
Disponibilità a ricevimenti e supporto anche via email sulle lezioni non seguite

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Modalità d'esame

Redazione di un progettino di design e simulazione di circuiti integrati a RF (e.g. LNA, power amplifier, Mixer) con tool ADS e poi simulazione di sistema (e.g. blocco progettato inserito in un transceiver) in Matlab/Simulink
+ prova orale per discutere del progettino e poi ulteriore domanda su aspetti più teorici del corso non coperti con il progettino

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