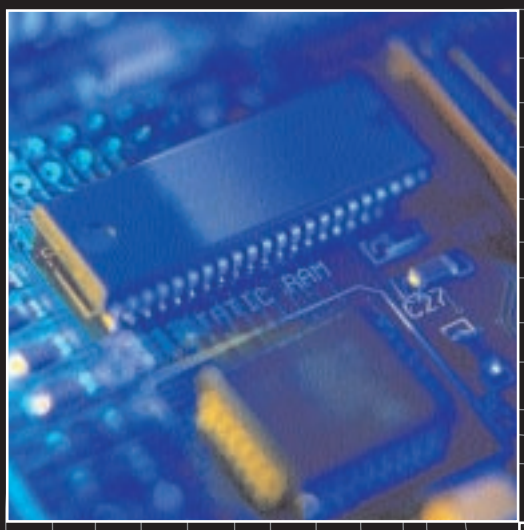
VANGUARD SERIES



IEEE ELECTRON DEVICES SOCIETY

INDEPENDENT SHORT COURSES

July 27, 2000, Austin, Texas
October 11, 2000, San Jose, California
October 19, 2000, Austin, Texas

Circuit Designs and Technology for RF-CMOS

Date
July 27, 2000

Location
Austin, Texas
Omni Hotel Downtown

Instructor
Dr. Asad Abidi, Professor of Electrical Engineering
University of California, Los Angeles

Topics (tentative)
- Low Noise Amplifiers
- Mixer Circuits
- Oscillator Circuits
- On-Chip Passive Components

Course Objectives
- Intuitive presentation of sometimes obscure RF subjects
- Clear description of key circuit building blocks in wireless transceivers
- Understanding dependence of circuit performance on physical attributes of transistors and passives

Course Description
Starting from fundamental concepts, the course will develop an understanding of how tuned amplifiers, mixers, and oscillators work. It will present state-of-the-art circuit design techniques, which show the limits to performance imposed by transistor technology. Using newly developed models for noise in mixers and oscillators, the relation of power dissipation to RF performance will be explained. The interaction of integrated spiral inductors with the silicon substrate will be discussed.

Who Should Attend?
The IEEE Electron Devices Society's independent short courses are intended for experienced electrical and electronic engineers who need quick, intense concentrated information on the latest technologies, and who already have a practical understanding of their own fields of expertise.

The RF-CMOS course is especially intended for
- IC design engineers
- System architects and integrators
- Developers of IC technology for mixed-mode and RF applications

About the Instructor


Internationally known for his work in integrated circuits for wireless communications, Dr. Asad Abidi is a professor in UCLA's Electrical Engineering Department conducting research in advanced analog ICs for communications, signal processing and data conversion. Dr. Abidi's research interests are focused on the technology of RF-CMOS integrated circuits. His group developed the first single-chip CMOS transceiver intended for frequency-hopped, spread spectrum data communications at 900 MHz. The mixed analog/digital transceiver, implemented in a standard CMOS process, encompasses all the functions between antenna and the baseband signal processing. Since then, his group has developed an ultralow power 900 MHz CMOS receiver for wireless paging, and most recently, a 2.4 GHz CMOS transceiver for wideband wireless LAN featuring adaptation of dynamic range, channel bandwidth and power consumption.

Dr. Abidi received his doctorate in 1981 from the University of California, Berkeley. His undergraduate degree in electrical engineering was earned from London's Imperial College of Science & Technology. From 1982 to 1985, he worked at Bell Laboratories, Murray Hill, NJ. He has received the 1988 TRW Award for Innovative Teaching and the 1997 IEEE Donald G. Fink Award, and an IEEE Millennium Medal. With his students, he is co-recipient of the Best Paper Award at the 1995 European Solid-State Circuits Conference, the Jack Kilby Best Student Paper Award at the 1996 International Solid-State Circuits Conference (ISSCC), the Jack Raper Award for Outstanding Technology Directions Paper at the 1997 ISSCC, and the Design Contest Award at the 1998 Design Automation Conference. He is a Fellow of the IEEE.

Overview of Fiber Optic Communications

Date
October 11, 2000

Location
San Jose, California

Instructor
Dr. Joe C. Campbell
Professor of Electrical and Computer Engineering,
Cockerell Family Regents Chair in Engineering,
University of Texas at Austin

Topics (tentative)
- Multiple quantum well lasers
- Distributed feedback lasers
- Strained-layer quantum well lasers
- Wavelength tunable lasers
- Vertical cavity surface emitting lasers

Photodetector topics include wide-bandwidth PINs, MSMs, bulk and multiple-quantum-well avalanche photodiodes, and photodetector bandwidth measurement techniques.

Modulator topics include directional coupler switches, Mach-Zehnder interferometers, and quantum-confined-Stark-effect devices will be covered. The WDM section will describe MUX/DMUX techniques, optical add/drop, and wavelength converters.

Course Objectives
- Fundamentals of semiconductor lasers
- Key laser parameters related to types of applications
- Fundamentals of optical detection
- Types of photodetectors and performance tradeoffs
- Advantages of external modulators and knowledge of common modulator types
- Need for and basic operation of WDM devices

Course Description

This short course will provide an overview of key optoelectronic devices for optical communication systems, specifically, semiconductor lasers, photodetectors, optical modulators and WDM components. The presentation for each class of devices will cover the fundamental device physics and operating principles. Important performance parameters including design tradeoffs will also be discussed. The laser section will discuss applications and the types of lasers that are utilized for specific systems.

Who Should Attend?

The IEEE Electron Devices Society's independent short courses are intended for experienced electrical and electronic engineers who need quick, intense concentrated information on the latest technologies, and who already have a practical understanding of their own fields of expertise.

This fiber optics course is especially intended for

- IC design engineers
- System architects and integrators
  Developers of optical communications with an emphasis on components

About the Instructor

Dr. Joe C. Campbell is Professor of Electrical and Computer Engineering and Cockerell Family Regents Chair in Engineering, University of Texas at Austin.

After receiving his doctorate in physics from the University of Illinois at Urbana in 1973, Campbell worked on integrated optics at Texas Instruments in Dallas. He joined the staff of AT&T Bell Laboratories in Holmdel, New Jersey in 1996. In the Crawford Hill Laboratory, he worked on a variety of optoelectronic devices including semiconductor lasers, optical modulators, waveguide switches, photonic integrated circuits, and photodetectors with emphasis on high-speed avalanche photodiodes for high-bit-rate lightwave systems. Dr. Campbell joined the faculty of the University of Texas in 1989, and is currently actively involved in Si-based optoelectronics and high-speed photodetectors. He is a fellow of IEEE.

Dr. Campbell has taught similar short courses on fiber optics for the IEEE Laser and Electo-Optics Society (LEOS).

Device, Circuit, and Reliability Modeling for Silicon Industry

Date

October 19, 2000

Location

The Commons, JJ Pickle Research Center, University of Texas
Austin, Texas

Instructor

Dr. Sanjay Banerjee
Professor, Department of Electrical and Computer Engineering
Director, Microelectronics Research Center
University of Texas at Austin

Topics (tentative)

- Semiconductor physics and p-n junction models
- MOS capacitance-voltage modeling
- MOSFET current-voltage behavior: SPICE type circuit models
- MOSFET short channel effects: DIBL, GIDL, charge sharing, velocity overshoot, quantum-mechanical models
- Bipolar junction transistor models: Hybrid-pi, Ebers-Moll and Gummel-Poon
- BJT second order effects: Early, Kirk, Webster, break down, HBTs
- Reliability Issues in Si IC's: Hot carriers, latchup, gate oxide integrity, electromigration, electrostatic discharge

Course Objectives

- Provide a review about the basics of semiconductor devices and physics
- Discuss the latest MOS and bipolar device compact models
- Provide overview of novel device structures, and silicon IC reliability issues

Course Description

This course will provide an overview of MOS and bipolar devices, circuit models and reliability physics. The course will describe the operation and design issues of Si integrated circuits, point out applications and discuss the process integration, reliability and testing issues.

Who Should Attend?

The IEEE Electron Devices Society's independent short courses are intended for experienced electrical and electronic engineers who need quick, intense, concentrated information on the latest technologies, and who already have a practical understanding of their own fields of expertise.

The course is especially intended for engineers interested in Si IC design, testing and processing.

About the Instructor

Director of the Microelectronics Research Center and Professor of Electrical and Computer Engineering at the University of Texas at Austin, Dr. Sanjay Banerjee is a renowned expert in ultra-high vacuum and remote plasma-enhanced chemical vapor deposition for silicon-germanium-carbon heterostructure MOSFETs and nanostructures. Banerjee is also interested in the areas of ultra-shallow junction technology and semiconductor device modeling. He holds the Cullen Trust Endowed Professorship in Engineering No.1 as well as being a Fellow of the Cockrell Family Regents Chair.

As a member of the technical staff, Corporate Research, Development and Engineering of Texas Instruments from 1983 to 1987, Banerjee worked on polysilicon transistors, and the physics of the Trench Transistor Cell that was used by Texas Instruments in the world's first 4Megabit DRAM. For this work, he was a co-recipient of the Best Paper Award at the IEEE International Solid State Circuits Conference in 1986.

Banerjee received his M.S. and doctorate from the University of Illinois at Urbana-Champaign in 1981 and 1983, respectively, and his B.Tech from the Indian Institute of Technology, Kharagpur in 1979, all in electrical engineering.

A 1996 IEEE Fellow, Banerjee's honors include the IEEE Millennium Medal 2000, Distinguished Lecturer for the IEEE Electron Devices Society (1997-), NSF Presidential Young Investigator Award, 1988 and the Engineering Foundation Advisory Council Halliburton Award, 1991.

IEEE EDS Independent Short Courses 2000 Registration

Last Name: _____First Name: _____MI:_____

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Short Course (please circle):

RF-CMOS	Fiber Optic	Modeling
July 27, Austin, TX	Oct. 11, San Jose, CA	Oct. 19, Austin, TX

Fee for Short Course:

$495	$450	$595
IEEE Member	IEEE Student Member	Non IEEE Member

_____ (# short courses)

x $_____ (fee)

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Fee includes entrance to one short course, one copy of the course notebook, course buffet lunch and two breaks.

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VANGUARD SERIES

IEEE Independent Short Courses
The Vanguard Series - 2000

Through the Electron Devices Society (EDS), The Institute of Electrical and Electronics Engineers presents a new series of continuing education courses. The new IEEE EDS Vanguard Series is for the experienced engineer who is seeking in-depth information on advanced technologies that complements his or her own knowledge and practice.

By providing a short intense burst of information, these one-day short courses are intended to serve the IEEE community as well as those with interest in cutting-edge subjects related to devices and circuits.

EDS has scheduled three courses in 2000 with very relevant technological topics. Sign up now for a solid day of instruction from a renowned specialist in his field.

July 27, Austin, TX
Circuit Designs and Technology for RF-CMOS
Dr. Asad Abidi, UCLA

October 11, San Jose, CA
Overview of Fiber Optics
Dr. Joe Campbell, UTexas

October 19, Austin, TX
Device, Circuit, and Reliability Modeling for Silicon Industry
Dr. Sanjay Banerjee, UTexas

Schedule

Registration	8:00
Class	8:30
Break	10:30
Class	11:00
Lunch (provided)	12:00
Class	1:00
Break	3:00
Class	3:30-4:30

Short Course Completed. Certificates awarded.

Fee

Fee per short course:	$495 IEEE member
	$450 student IEEE member
	$595 non-IEEE member

Fee includes entrance to one short course, one copy of the course notebook, course buffet lunch and 2 breaks.

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