MEMS: Fundamentals, Sensors and RF Applications
Presenters: Mona Zaghloul and Sanjay Raman

Course 2: January 20 - 22, 2003

Fee: $1,100
2.1 CEU

Who should attend
This course is designed for electrical engineers, mechanical engineers, civil engineers, chemists, material scientists and all physical sciences professionals interested in building sensors to sense the environment and to design RF micro-machined active and passive components.

Required background
Bachelor’s degree or equivalent in engineering or in physical sciences.

Course description
This is a basic introductory course to microelectromechanical systems that will allow engineers to learn basic MEMS design and fabrication. It will give an overview of MEMS design, fabrication and applications in basic commercial sensor products. Applications of MEMS to RF communication and RF MEMS devices will be included.

Registration Form • Electronics and RF Applications Short Courses

Name ____________________________________________________________
Title ____________________________________________________________
Company or University _____________________________________________
Mailing Address __________________________________________________
City ___________________ State and/or Country __________ Zip/Postal Code __________
Telephone __________________ Fax ________________________________
E-mail __________________________________________________________

Registration Fees**

Course 1: Analog and Digital Integrated Circuits — 3.1 CEU • Jan. 13 - 17, 2003
One Person $1,650.00
CEU Processing Fee $25.00
(SS#________________________)
O n-Campus Parking $8 per day x ___ days $ __________
TOTAL $________

One Person $1,100.00
CEU Processing Fee $25.00
(SS#________________________)
$8 per day x ___ days $ __________
TOTAL $________

Course 3: 802.11 and Bluetooth Operations and Circuit Implementation - 2.8 CEU • Feb. 3 - 6, 2003
One Person $1,400.00
CEU Processing Fee $25.00
(SS#________________________)
O n-Campus Parking $8 per day x ___ days $ __________
TOTAL $________

One Person $1,400.00
CEU Processing Fee $25.00
(SS#________________________)
$8 per day x ___ days $ __________
TOTAL $________

Total Registration Payment (sum of all courses) $___________________
**Discounts available for companies associated with the Analog and Mixed-Signal Center. Call for more information.

Payment
Company Check (U.S. Dollars) $________
Credit Card* (circle one)
MasterCard • Visa • AmEx
Card # __________________________
Exp. Date __________________________
Signature __________________________

*Bank surcharge added for credit card payments.

Mail registration form with payment to:
AMSC, Texas A&M University
Attn: Ella Gallagher
3128 TAMU
College Station TX 77843-3128 USA

Information:
Tel: (979) 845-9587
Fax: (979) 845-7161
E-mail: amscsc@tamu.edu

Continuing Education Units (CEUs) are available on request by marking the appropriate line on the registration form and submitting the fee for each course.

Instructors
Mona E. Zaghloul received her Ph.D. degree from the University of Waterloo, Canada. She is currently a professor of electrical engineering and computer science at George Washington University, Washington, D.C., where she also is director of the Institute of MEMS and VLSI Technologies. She has published more than 140 technical papers in the general areas of circuits and systems, microelectronics systems design, VLSI circuits design and microelectromechanical systems. Her main interests are in the areas of analog design of VLSI circuits, VLSI systems application, design, and implementation of MEMS and RF MEMS.

Sanjay Raman received a Ph.D. in electrical engineering from the University of Michigan in 1977. Since that time he has been an assistant professor with the Bradley Department of Electrical and Computer Engineering at Virginia Tech. His research interests include RF/microwave/mixed-signal integrated circuits, RF MEMS/EMS and communications and sensor microsystem applications.

Monday, January 20
• MEMS fundamentals, design and fabrication
• Introduction, examples of commercial MEMS, MEMS classes, infrastructure needed
• Access to fabrication facility, what is needed in fabrication facility, procedure for design, comparison to standard VLSI, MEMS CAD tools
• Micromachining techniques, bulk micromachining, surface micromachining, examples of silicon sensors, brief description of varieties of silicon sensors

Tuesday, January 21
• Applications of MEMS and classification
• Examples of MEMS applications in transportation, medical, optical communication
• RF MEMS concepts, design in RF communications

Wednesday, January 22
• RF MEMS for highly integrated RF systems, micromachined passive (lumped) components, RF MEMS switches and MEMS/NEMS resonators for RF tank/filter applications