

Looking into Hidden Worlds:

Intro to Subsurface Sensing and Imaging Systems

Exciting New Course!

ECSE-4963-01; CRN: 75865; 3 Credits

Pre-requisites: ECSE-2100 (Fields and Waves I),
ECSE 2410 (Signals and Systems)

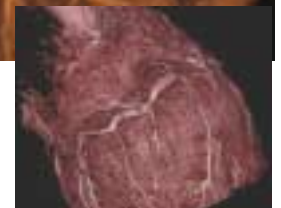
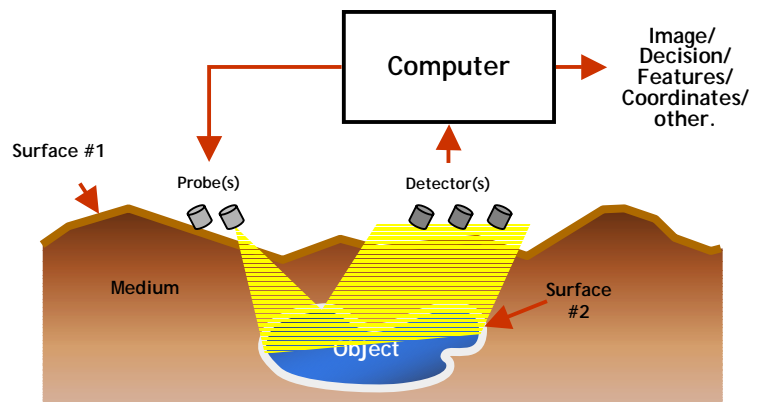
Meeting Times: Tuesdays & Fridays 12-1 pm

Instructor: Dr. Kai E. Thomenius, Chief Technologist,
Imaging Technologies, GE Corporate R&D Center

Engineers are often faced with the problem of sensing and imaging objects that are hidden under a surface. For example, detecting tumors using laser scanning microscopy, locating underground mines using radio waves, imaging infants using ultrasound, detecting cracks in machine parts and bridges, and medical imaging by x-ray radiography, magnetic resonance imaging (MRI), and computer assisted tomography (CAT).

This course will introduce the student to the basics of subsurface sensing and imaging:

- Properties of probes such as optical beams, x-rays, ultrasonic waves, and electromagnetic waves.
- How the probes interact with media – transmission, reflection, scattering, diffusion
- Sensors for detecting subsurface signals
- Extracting information from subsurface signals using multi-view tomography (MVT), Localized probing and mosaicing (LPM), and multi-spectral discrimination (MSD).



About the Instructor: Dr. Kai E Thomenius received a Ph.D. in Electrical Engineering from Rutgers University, New Brunswick, N.J in 1978. He joined General Electric's Global Research Center in Niskayuna, NY, where he is currently a Chief Technologist in the Imaging Technologies Center. He is a Fellow of the American Institute of Ultrasound in Medicine, a member of the IEEE, Acoustical Society of America, and SPIE.

This course is sponsored by the Center for Subsurface Sensing and Imaging Systems. For more information about the center, visit <http://www.ecse.rpi.edu/censsis> For more information about this course, contact Prof. Badri Roysam, JEC 7010.

