

AGENDA & CONTENTS*
INFRARED TECHNOLOGY AND APPLICATIONS-
TARGETING SYSTEMS (ITA-TS-RA)
Georgia Institute of Technology

8:05 – 8:50 **I. Introduction**

8:50 - 9:40 **II. Overview**

9:40 - 9:50 Coffee Break

9:50 – 11:50 **III. Basic Concepts**

Blackbody Radiation
Selective Emitters

10:50 – 11:00 Coffee Break

Thermal Radiation Contrast
Radiometry
Atmospheric Transmission

11:50 – 12:50 **Lunch**

12:50 – 4:55 **IV. IR Imaging Systems**

Gen 1 FLIRs
Picture Forming Process
Parallel Scan Systems
Scanners, Coolers, & Accessories
Serial Scan Systems

2:00 – 2:10 Coffee Break

Gen 2 FLIRs
Focal Plane Arrays (FPAs)
MOSFET Switches
Readout Integrated Circuits (ROICs)
Charge Skimming
Nonuniformity Correction (NUC)

3:30 – 3:40 Coffee Break

Recent Developments - Scanning
Example Systems & Features
Example Video Imagery
Recent Developments – Staring

IR Imaging Systems (completed next morning)

4:55 End of Day Discuss, hand in test (optional)

*representative only, course is constantly changing due to on-going development to keep pace with rapidly evolving technologies

Second Day

- 8:00 – 8:10 Review of Day 1 Test Answers
- 8:10 - 10:40 **IV. IR Imaging Systems** (Completed)
Uncooled Imagers
Gen 3 FLIRs
- 9:20 - 9:30 Coffee Break
Ambient Light Imagers
2D & 3D Imaging Laser Radars
Image Fusion & Advanced Concepts
- 10:40 - 10:50 Coffee Break
- 10:50 – 3:15 **V. Properties of Scenes and Targets**
Signature Generation Mechanisms
Target Characteristics
- 12:00 – 1:00 **Lunch**
- 1:00 – 3:15 Properties of Scenes & Targets (completed)
Backgrounds & Clutter
Clutter Metrics
- 2:00 - 2:10 Coffee Break
Time Lapse Thermal Imagery
Hyperspectral Discrimination
Polarization Discrimination
- 3:15 – 5:00 **VI. Terminal Homing Seekers/IRSTs**
Part 1:
Guidance Laws & Implementation
CLOS, Laser Beam-Rider, PNG, ...
AM/FM Reticle Seekers
- 3:30 - 3:40 Coffee Break
Pseudo-imaging Seekers
Imaging Systems
Merit Functions
Terminal Homing Seekers (Completed next morning)
- 5:00 End of Day Discuss, hand in test (optional)

Third Day

- 8:00 - 8:10 Review of Day 2 Test Answers
- 8:10 - 8:55 **VI. Terminal Homing Seekers** (Completed)
Part 2: Autonomous Nonimaging Acquisition
Adaptive Spatial Filters
Spectral Discrimination
Infrared Search & Track (IRST)
- 8:55 - 10:15 **VII. Video Trackers**
Tracker Types & Algorithms
Example Video Imagery
- 9:20 - 9:30 Coffee Break
Tracker Performance Issues
- 10:15 - 2:35 **VIII. IR Optical Design**
Light Properties & Deflection
Infrared Windows & Signature Control
Ray Tracing & Terminology
- 10:30 - 10:40 Coffee Break
Telescopes & Displays
Real System Configurations & Examples
- 12:00 – 1:00 **Lunch**
- 1:00 - 2:35 IR Optical Design (Completed)
Shading & Narcissus Control
Cold Shields & Cold Filters
- 2:00 – 2:10 Coffee Break
Aberrations & Resolution Control
Scanning & Dither Techniques
- 2:35 – 5:05 **IX. Detectors**
Detection Mechanism Overview
Thermal & Quantum Detectors
Cooling Requirements
Merit Functions
- 3:30 – 3:40 Coffee Break
PC, PV, nBn, QWIP, & Superlattice Principles
Uncooled Microbolometer Principles
Example Video Imagery
Focal Plane Array Fabrication, Operability, & Yield
- 5:05 End of Program Discuss, hand in test (optional)