

INFRARED TECHNOLOGY & APPLICATIONS – SYSTEM PERFORMANCE EVALUATION (ITA-SPE-RA) COURSE CONTENT* SUMMARY

(1/2) DAY

This half day course ends at noon and is devoted exclusively to system design, specification, and evaluation. The discussion ties together all the material presented in the 3-day ITA-TS-RA companion course by showing how system designs evolve by “flowing down” top -level mission requirements into detailed component specifications.

Evaluation Tools

- How is system resolution modeled?
- How does classical linear systems theory apply to infrared systems?
- What is a modulation transfer function?
- How does one predict the signal amplitude seen by an infrared system?

An example problem is analyzed to show how IR missile lock-on probability depends on resolution maintained during launch.

System Performance Analysis

- What is meant by “target acquisition”?
- What is the significance of “bar target equivalency”?
- What resolution is needed for target acquisition?
- What is Minimal Resolvable Temperature or MRT and the new Contrast Threshold Function or CTF?
- How does MRT or CTF allow acquisition range prediction?
- How does MRT or CTF allow specification of subsystem design parameters?
- What are the steps in the design specific?
- How do we know an IR system will meet its performance requirements?

IR system performance sensitivities, historical evaluation problems, and accuracy achievements are assessed.

The overall goal of this course is to describe how to design a targeting system to meet a user need or to evaluate an existing system to determine if it meets that need. The course is intended for those who have already attended the ITA-TS-RA course or who have gained the same level of knowledge elsewhere.

*content is representative in that the course is under constant revision to incorporate continuing developments in the field