

EENG: 680
Synthetic Aperture Radar (SAR) Signal and Image Processing

Required Textbook:

- *Synthetic Aperture Radar Signal Processing with Matlab Algorithms* (Soumekh)

Other Textbooks:

- *Spotlight Mode Synthetic Aperture Radar* (Jakowatz)
- *Spotlight Synthetic Aperture Radar* (Carrara)
- *Introduction to Radar Systems* (Skolnik)
- *Introduction to Airborne Radar* (Stimson)

Week 1:	SAR Introduction, SAR Range Imaging
Week 2:	SAR Range Imaging, Cross-Range Imaging
Week 3:	Cross-Range Imaging, Radiation Pattern
Week 4:	Stripmap SAR,
Week 5:	Spotlight SAR
Week 6:	Circular SAR / ISAR, Digital Spotlight
Week 7:	Polar Format Imaging, Backprojection Imaging
Week 8:	Fast Backprojection Imaging, High Performance Computing: Linux Cluster vs. FPGA
Week 9:	Motion Compensation
Week 10:	Autofocus

Matlab Assignments (6): 40%

Range Imaging, Cross-Range Imaging, Radiation Pattern, Stripmap SAR, Spotlight SAR, CSAR/ISAR

Projects: 30%

Polar Format Imaging, Backprojection Imaging

Midterm and Final: 30%

Data for Projects:

- AFRL SAR Backhoe data (public released)