Tentative Syllabus for EECE–3154
Hyperspectral Imaging in China
Rev. 1, 25 October 2015

Day		Topic
1: Mon 16 May		Basic Optics
2: Tue 17 May		Basic Optics and Digital Cameras
3: Wed 18 May		Spectroscopy
4: Thu 19 May		Color Vision and Hyperspectral imaging
Mon 23 May	HW 1	Optics and Digital Cameras
5: Mon 23 May		Instrumentation
6: Tue 24 May		Project Planning: Data Sets
7: Wed 25 May		Absorption, Scattering and Reflection
8: Thu 26 May		Atmospheric Effects
9: Fri 27 May		Computational Modeling and Inversion
10: Mon 30 May		Noise, Errors, and Inversion
Mon 30 May	HW 2	Modeling Color Cameras
11: Tue 31 May		Matrix Inversion
12: Wed 1 Jun		Principal Components
13: Thu 2 Jun	Students	Student Progress Reports
14: Mon 6 Jun		Non–Negative Matrix Factorization
Mon 6 Jun	HW3	Algorithms
15: Tue 7 Jun		Applications
16: Wed 8 Jun		Review and Project Support
17: Thu 9 Jun		Examples
18: Mon 13 Jun	Students	Student Final Presentations
19: Tue 14 Jun	Students	Student Final Presentations

Grading:

- Prepared Presentations 20%
- Unprepared Presentations 10%
- Homework Projects and Teamwork 30%
- Final Projects and Teamwork 20%
- Overall Participation 20%

Course Objectives: Students will be able to

- Apply some of the concepts of optics,— including the lens equation, diffraction, spectroscopy, and simple radiometry,— to optical systems.
- Understand how the optical properties of atmosphere and target affect hyperspectral images.
- Be able to select appropriate optical wavelengths for different imaging applications.
- Understand Beer's law, reflection, scattering and other basic concepts.
- Apply these computational techniques to predict light hyperspectral sensor response.
- Understand and explain the different analytical tecniques for solving inverse problems.