

2003 ENEE 408E TEAM PROJECTS

The team members for each project are listed. For each design project there are two teams. Each team should come up with an overall design, including the selection of appropriate commercially available parts wherever necessary. These will include: (1) light source(s), which may be lamps, LEDs or lasers; (2) the design and layout of the passive part of the optical system, including for example, lenses, mirrors, fibers, etc. and (3) the detector or detectors, which may be photodiodes, photomultiplier, imaging arrays, etc. An opto-mechanical structure should be designed to hold the system together, and some form of CAD drawing of this included. A code V analysis of any optical part of the system should be included. Each team should complete a project report and prepare a Powerpoint poster describing their project. There will be a poster template provided.

BORESCOPE TEAMS A and B

Mohith Narayan
Tuan Nguyen-Viet
Charles Njuguna
Srinivas Reddy
Dominic E. Rego

Tommy Tso
Firew D. Waktole
Alpha Wane
Carl Wright
Pat Youngmisuk

Design an optical instrument for examining the inside of long narrow structures, for example, pipes, conduits, or even the human body. The design will include an imaging chain, a built-in illuminator for visualization in dark spaces, and a CCD camera. Provide basic electronic design information for driving the illuminator.

OVERHEAD PROJECTOR TEAMS C and D

Duncan Kahle
Christine Kim
Su Kim
Jarrett Larrow
Lawrence Laryea

Jaeff Lee
Steven Lewis
Sabrina Dobbs
John Liu
George Monikang

Design an overhead projector, including projection light source, imaging optics and opto-mechanical structure.

BINOCULAR OPTICAL WIRELESS COMMUNICATION SYSTEM TEAMS E and F

David Abrams
Freshteh Aghdam
Mostafa Shakeri
Paul Baret
Pavel Beresnev

Ziad Beydoun
Meete Chansrakaew
Tim Cobb
Angela Huegel
Dominic Divakuruni

Design a line-of-sight optical communication system incorporated into binoculars. These binoculars will include the standard binocular imaging train as well as an on-off keyed laser communication link, which operates using parts of the binocular optical train, and functions when two individuals who wish to communicate view each other through the binoculars.

CASSEGRAIN ASTRONOMICAL TELESCOPE TEAMS G and H

Yao Ling
Bushara Dosa
Femi Sonde
Mohamed Foh
Allyson Gregory

Noman Habib
John Hayes
Pamela Hemmings
Michael Holloway
Anthony Demerest

Design a high performance 8inch Cassegrain-type astronomical telescope using commercially available mirrors and lenses. Provide both a viewing eyepiece and a port for attaching a digital camera. Provide details of how everything mounts together, for example using standard camera mounts. Design an opto-mechanical structure for pointing the telescope precisely.

RANGE FINDER TEAMS I and J

Deepika Sangam
Seth Seidman
Jimi Ayodele
Dmitry Shif
Jagjot Singh

Kunal Singh
Alison Finn
Pietro Sparacino
Ioannis G. Stamatiou
Dave Starsoneck

Design an optical instrument for measuring the range of an object that is distant from 100m to 2km from an observer with an accuracy of 1m. I do not recommend that this be a system based on time-of-flight optical pulse measurement.

NEPHELOMETER TEAM K

Nathan Ricklin
Jeremy J. Rodgers
Mazda Sabouri
Nick Salem
David T. Samson

Design an optical instrument for measuring the total amount of light scattering from a turbid medium as well as the angular distribution of this scattering.