The R language has excellent support for loading, analyzing and plotting geospatial data. The course will teach you how to use R as a Geographical Information System. In addition to a good general-purpose introduction to R, we will learn about the most important add-on packages supporting geospatial data analysis and management. Using these packages, we will cover how to load nearly any format GIS data file into R and directly access the underlying numerical representation of the data. Basic vector and raster GIS operations, such as resampling, projection and spatial queries, will be introduced. The course is based around a series of hands-on tutorials that will guide students through each step of the analysis. Completion of the course will allow students to begin using R as a data analysis tool for spatial and non-spatial problems.

Day 1:
- Objective: Getting comfortable with R
  (Advanced students will skip ahead.)
- Course overview
  - Working in RStudio
  - Evaluating expressions
  - Writing small scripts and functions
  - Understanding R generic functions
  - Looping and flow control
  - Working with data tables
  - Plotting data

Day 2:
- Objective: Learn to load, analyze and visualize vector data
- Brief introduction to vector data concepts
- Overview of vector data packages and capabilities
- Loading vector data in various formats
- Plotting vector data
- Reprojecting vector data
- Geometric operators and predicates

Day 3:
Objective: Learn to load, analyze and visualize raster data
- Brief introduction to raster data concepts
- Overview of raster data packages and capabilities
- Loading raster data in various formats
- Plotting raster data
- Converting to vector format
- Reprojecting raster data
- Subset and resample raster data

Day 4:
- Objective: Combine raster and vector data, analyze own data
- Brief introduction to intersecting vector and raster data
- Additional types of geospatial data analysis and relevant packages
- Using vector data to sample raster data
- Rasterizing vector data
- Plotting overlays
- Additional practice problems or student-driven projects