Description
Data Science is the study of the generalizable extraction of knowledge from data. Being a data scientist requires an integrated skill set spanning computer science, mathematics, statistics, and domain expertise along with a good understanding of the art of problem formulation to engineer effective solutions. This 3-credit course introduces students to this rapidly growing field and equips them with some of its basic principles and tools as well as its general mindset, using primarily the statistical computing language R.

Topics covered include:
- The data science process
- Exploratory data analysis
- Linear regression
- Classification
- Clustering
- Principal components analysis
- Data wrangling
- Recommender systems
- Social network mining
- Data visualization

The focus in the treatment of these topics is on breadth, rather than depth, and emphasis is placed on integration and synthesis of concepts and their application to solving problems. Necessary theoretical abstractions (mathematical and algorithmic) are introduced as and when needed.

Audience
The course is suitable for upper-level undergraduate or graduate students in computer science, engineering, applied mathematics, business, and related analytic fields.

Prerequisites
Students are expected to have basic knowledge of algorithms and reasonable programming experience (equivalent to completing a data structures course such as CptS 223), and some familiarity with basic linear algebra (e.g. eigenvalue/vector computation) and basic probability and statistics.

Course work
The course consists of lectures (three times a week, 50 min each), and involves about 4 assignments and one semester project. Students are encouraged to work in teams of two or three for a project.

Grading (roughly): Class participation (10%), Assignments (30%), Project (30%), Exam (30%).

Enrollment for graduate students
If you are a graduate student and wish to enroll for the course, send an email to Jessica Claire Harris at the address jcharris@wsu.edu (and copy me) so she may give you the required permission.