



**AAI-627WS-Data Acquisition/Modeling/Analysis –
Big Data Analytics**
School of Engineering and Science
Fall 2021

Instructor: Rensheng Wang
Contact Info: RWANG1@stevens.edu
Office Hours: Online Session by Appointment
Course Web Address: <https://sit.instructure.com/courses/54333>
Prerequisite(s): EE603
Corequisite(s): None
Cross-listed with: None

COURSE DESCRIPTION

Exposing the student to analytic tools used for data acquisitions, processing and modeling with the challenges in the big-data era. Tapping into the powerful tool of data analytics to create strategic advantage and identify new business opportunities. The studied datasets can vary from the traditional pure numerical data sets to more text related social network data. It includes the data pre-processing, feature extraction, model comparisons and selections, model induction and related forecasting or predictions.

Helping students extend the concepts learned in the EE prerequisites courses to more concrete applications scenarios, like predictive modeling, time series forecasting, e-Business recommendation systems etc, and learn how to apply appropriate analytic techniques and tools to analyzing the big data sets.

COURSE MATERIALS

Textbook(s): No assigned textbook.
Materials: Lecture notes are posted weekly.

GRADING PROCEDURES

Grades will be based on:

Homework	(30 %)
Midterm	(30 %)
Project	(20 %)
Final	(20 %)

TENTATIVE COURSE SCHEDULE

	Topic(s)	Assignment
Week 1	Introduction	
Week 2	Time series analysis (I)	HW #1 due via canvas
Week 3	Time series analysis (II)	
Week 4	Market basket analysis	
Week 5	Linear regression & logistic regression	
Week 6	Ensemble learning: Bagging and Boosting	
Week 7	Recommendation systems	
Week 8	Principle component analysis	
Week 9	Midterm	
Week 10	Final Project and Feature Engineering	
Week 11	From Hadoop to Spark Programming	
Week 12	Recommendation in PySpark	
Week 13	From Neural Networks to Deep Learning	
Week 14	Final Test	
	Final Project Due	

ACADEMIC INTEGRITY

Graduate Student Code of Academic Integrity

All Stevens graduate students promise to be fully truthful and avoid dishonesty, fraud, misrepresentation, and deceit of any type in relation to their academic work. A student's submission of work for academic credit indicates that the work is the student's own. All outside assistance must be acknowledged. Any student who violates this code or who knowingly assists another student in violating this code shall be subject to discipline.

All graduate students are bound to the Graduate Student Code of Academic Integrity by enrollment in graduate coursework at Stevens. It is the responsibility of each graduate student to understand and adhere to the Graduate Student Code of Academic Integrity. More information including types of violations, the process for handling perceived violations, and types of sanctions can be found at www.stevens.edu/provost/graduate-academics.

EXAM ROOM CONDITIONS

The following procedures apply to quizzes and exams for this course. As the instructor, I reserve the right to modify any conditions set forth below by printing revised Exam Room Conditions on the quiz or exam.

1. Students may use the following devices during quizzes **and/or** exams. Any electronic devices that are not mentioned in the list below are not permitted.

Device	Permitted?	
	Yes	No
Laptops		X
Cell Phones		X
Tablets		X
Smart Watches		X
Google Glass		X
Other (calculator)	X	

2. Students **are not** allowed to work with or talk to other students during quizzes and/or exams.

LEARNING ACCOMODATIONS

Stevens Institute of Technology is dedicated to providing appropriate accommodations to students with documented disabilities. Student Counseling and Disability Services works with undergraduate and graduate students with learning disabilities, attention deficit-hyperactivity disorders, physical disabilities, sensory impairments, and psychiatric disorders in order to help students achieve their academic and personal potential. They facilitate equal access to the educational programs and opportunities offered at Stevens and coordinate reasonable accommodations for eligible students. These services are designed to encourage independence and self-advocacy with support from SCDS staff. The SCDS staff will facilitate the provision of accommodations on a case-by-case basis. These academic accommodations are provided at no cost to the student.

Disability Services Confidentiality Policy

Student Disability Files are kept separate from academic files and are stored in a secure location within the office of Student Counseling, Psychological & Disability Services. The Family Educational Rights Privacy Act (FERPA, 20 U.S.C. 1232g; 34CFR, Part 99) regulates disclosure of disability

documentation and records maintained by Stevens Disability Services. According to this act, prior written consent by the student is required before our Disability Services office may release disability documentation or records to anyone. An exception is made in unusual circumstances, such as the case of health and safety emergencies.

For more information about Disability Services and the process to receive accommodations, visit <https://www.stevens.edu/sit/counseling/disability-services>. If you have any questions please contact:

Lauren Poleyeff, Psy.M., LCSW - Disability Services Coordinator and Staff Clinician in Student Counseling and Disability Services at Stevens Institute of Technology at lpoleyef@stevens.edu or by phone (201) 216-8728.

INCLUSIVITY STATEMENT

Stevens Institute of Technology believes that diversity and inclusiveness are essential to excellence in education and innovation. Our community represents a rich variety of backgrounds, experiences, demographics and perspectives and Stevens is committed to fostering a learning environment where every individual is respected and engaged. To facilitate a dynamic and inclusive educational experience, we ask all members of the community to:

- be open to the perspectives of others
- appreciate the uniqueness their colleagues
- take advantage of the opportunity to learn from each other
- exchange experiences, values and beliefs
- communicate in a respectful manner
- be aware of individuals who are marginalized and involve them
- keep confidential discussions private