



DATA MINING II* Data mining is the process of finding anomalies, patterns and correlations within large data sets to predict outcomes.

CRN 45099

Course Number CS 2605

The huge amount of data generated by healthcare activities is too complex and voluminous to be processed and analyzed by existing professionals and traditional methods. Data mining is helping healthcare organizations and others make customer relationship management decisions, physicians identify effective treatments and best practices, patients receive better and more affordable healthcare services, pharmaceutical and biotech companies develop new and more effective treatments, and healthcare insurers detect fraud and abuse.

Data mining is an applied discipline. We will be doing hands-on work in a number of algorithms using the R statistical language as well as Python. (No prior experience with these languages is assumed.) The course will culminate in a semester long project that applies the techniques learned.

Start Date and Time

Thursdays, September 5–December 19 • 6:00–8:30 p.m.
Cooper University Hospital

Program Highlights

- All courses are located on the Cooper campus, Roberts Pavilion
- Evening hours
- 4 courses or 12 graduate semester hours
- Certificate awarded at completion
- Applicants can register as non-matriculated for the first three classes.

For questions regarding the Certificate program please contact Anthony Breitzman at Breitzman@rowan.edu.

For assistance with the registration form please contact Nancy Street at Street-Nancy@cooperhealth.edu

**Completion of Data Mining 1 is not a requirement, but a strong background in Math and some programming experience will be helpful.*

Objectives:

To learn how to harness massive data sets to find interesting results. Specifically:

- This is a continuation of Data Mining I. We will continue to gain a working knowledge of Python, R, and numerous packages, libraries and APIs.
- To learn how to harness massive data sets to find interesting results.
- Understand the complexity of mining massive datasets with high dimensions.
- Use state-of-the art techniques to reduce the dimension of a problem without losing the intelligence hidden in the data.
- Recognize which algorithms for extracting knowledge from a given set of data are most appropriate for a given problem.
- Use multiple approaches to solve actual data mining problems (sometimes over weeks, sometimes in teams)
- Interpret results so that customers or companies can make intelligent business and operations decisions.
- Learn to present results and teach new techniques to peers
- Enter a couple of data mining contests

Specific Topics:

(we'll cover most of the following and maybe more):

- Review of Neural Networks and Perceptrons
- KDD v DM
- Sci-Kit Learn
- K-Folds Validation
- Support Vector Machines
- Random Forests/Bagging
- Boosting /AdaBoost/Tree Stumps
- Nearest Neighbors
- SMOTE (Synthetic Minority Oversampling Technique)
- Averaging Models and Other Ensembles
- Multiclass Classifiers
- Time Series Modeling
- Link Analysis
- Seriation
- Genetic Algorithms
- NN-Rules Generation

Tuition:

Rowan graduate tuition is \$2400 for the three credit course.

Office of the Registrar

Activation & Registration Form for Visiting (Non-Matriculated) Students

PART I: Request to Be Activated (or Reactivated) for the following term: _____

Student Biographical Information

Rowan ID *if applicable* _____ SSN *optional* _____ Date of birth _____

Email address _____

Please write clearly. The email above is the one that will be used to communicate with you during the activation & registration process.

Legal name _____	_____	_____
<i>Last name/family name</i>	<i>First</i>	<i>Middle</i>

Other names that may appear on your academic records _____

Mailing/Permanent Address _____
number and street
city
state
zip code

County _____ State/Country of legal residence _____ Month/year you began living in that state _____

Preferred phone _____ Cell phone _____ Work phone _____

Citizenship, Ethnicity, and Gender *(The questions in this section are optional. No information you provide will be used in a discriminatory manner.)*

- Male Female Choose not to report
 U.S. citizen Permanent Resident *(also called Resident Alien)* - Indicate Resident Alien ID#: _____
 Non-U.S. citizen - Indicate country of citizenship: _____

What is your ethnicity? Hispanic or Latino Not Hispanic or Latino
 If Hispanic or Latino, please choose one of the following: Central or South American Cuban Hispanic-other Mexican Puerto Rican

Regardless of your responses to question 1 & 2, please choose one or more race categories from the list below.

- American Indian or Alaskan Native Asian Black or African American Native Hawaiian or other Pacific Islander White

Please indicate the level at which you are requesting to take coursework (*graduate* or undergraduate*): _____

*(*If you are interested in taking graduate-level coursework, you will need to provide proof of bachelor's degree by submitting an unofficial transcript from your undergraduate institution.)*

Do you plan to apply or did you apply to an undergraduate or graduate program at Rowan University? _____

If yes, what program? _____

PART II: Course Registration Request

I am requesting permission to register for the following course(s)*:

Please enter CRN(s) in the space(s) provided and then sign and date below.

Fall 2019	45099	Math, CS 2605, Section 1	Data Mining II
<i>Term and Module</i>	<i>CRN</i>	<i>Subject Code, CRS# and Section #</i>	<i>Course Title</i>
<i>Term and Module</i>	<i>CRN</i>	<i>Subject Code, CRS# and Section #</i>	<i>Course Title</i>

*For detailed information on selecting and registering for courses, please visit <http://www.rowan.edu/provost/registrar/courseschedule.html>.

Permission to Activate & Register

- I give permission to the Office of the Registrar to register me for the course(s) listed above - identified by their proper 5-digit CRN(s);
- I understand that once registered for this course(s), costs will be generated and assigned to my account. It is my responsibility to pay for the entire term in full before the beginning of the first course (visit www.rowan.edu/bursar for further details regarding payment);
- I understand that once registered for this course(s), costs will be generated and assigned to my account. It is my responsibility to pay for all charges in full by the payment deadline or immediately after registration has been performed if that date is after the payment deadline for the term in question. (Visit www.rowan.edu/bursar for further details regarding payment);
- I understand that any changes to my registration (including drops) must happen within the drop/add period for the course; otherwise, I will be responsible for all the charges incurred.
- I understand that, per Rowan University policy, failure to attend does not constitute a drop or withdrawal and only a drop within the proper deadlines will provide a refund of charges;
- I understand that non-matriculated students are not eligible for financial aid;
- I understand that as a non-matriculated undergraduate student I can take no more than 24 credits of undergraduate coursework (no more than 11.5 credits per semester);
- I understand that as a non-matriculated graduate student I can take no more than 9 credits (depending upon program) of graduate coursework (no more than 8.5 credits per semester);
- I understand that registering for a course as a non-matriculated student does not guarantee admission to an academic program; and,
- I certify that all information supplied above is factually true and honestly presented to the best of my knowledge.

Student signature *date*

Signature of Assistant Registrar of Registration & Customer Service (or designee) *date*

Submitting This Form

Please **fax** this form to 856-256-5672, Attn: Office of the Registrar. You may also **e-mail** the completed form to registrar@rowan.edu. Once you have been activated and registered, you will be sent a confirmation email which will include your Rowan ID and PIN (if applicable) along with other necessary information. Please be sure to read this email and follow any instructions carefully. **Questions?** Contact Office of the Registrar at 856-256-4360 or email registrar@rowan.edu.