DATA ANALYTICS ENGINEERING (DAEN)

500 Level Courses

DAEN 500: Data Analytics Fundamentals. 3 credits.
Provides a foundation in data analytics from which the student will build.
Focuses on a dataset where students will use analytics tools and apply
statistical methodologies in order to extract information of value. Offered
by Volgenau School of Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy,
Graduate, Non-Degree or Senior Plus.
Enrollment is limited to Graduate, Non-Degree or Undergraduate level
students.
Students in a Non-Degree Undergraduate degree may not enroll.
Enrollment limited to students in the College of Science, Schar School of
Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Satisfactory/No Credit scale.

Recommended Prerequisite: Completion of 18 credit hours of coursework
in the MS Data Analytics program and departmental approval to register.
It is also recommended that DAEN 690 be taken in your last semester.

DAEN 527: Learning From Data. 3 credits.
This is an introductory course in machine learning and pattern
recognition that covers basic theory, algorithms, and applications.
Machine learning is the science of getting computers to act without being
explicitly programmed. This course balances theory and practice, and
covers the mathematical as well as the heuristic aspects. It provides a
broad introduction to machine learning and pattern recognition. Topics
include: (i) supervised learning (parametric/non-parametric algorithms,
support vector machines, kernels, neural networks). (ii) Unsupervised
learning (clustering, dimensionality reduction, recommender systems,
autoencoders). (iii) Learning theory (bias/variance tradeoffs, VC theory,
generalization). (iv) Ensemble methods (boosting and bagging, random
forests). (v) Deep learning (deep belief networks, convolutional neural
networks, deep autoencoders). The course will draw from numerous case
studies and applications. Offered by Volgenau School of Engineering.
May not be repeated for credit. Equivalent to ECE 527.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy,
Graduate, Non-Degree or Senior Plus.

Recommended Prerequisite: (MATH 203 and STAT 346) or equivalent

DAEN 690: Data Analytics Project. 3 credits.
Capstone project course for MS in Data Analytics program. Key activity
is completion of a major applied team project resulting in an acceptable
technical report and oral briefing. Student should plan to take this
course in the last semester of studies. Offered by Volgenau School of
Engineering. May not be repeated for credit.

Recommended Prerequisite: Completion of 18 credit hours of coursework
in the MS Data Analytics program and departmental approval to register.
It is also recommended that DAEN 690 be taken in your last semester.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy,
Graduate, Non-Degree or Senior Plus.
Enrollment is limited to Graduate, Non-Degree or Undergraduate level
students.
Students in a Non-Degree Undergraduate degree may not enroll.
Enrollment limited to students in the College of Science, Schar School of
Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

DAEN 698: Data Analytics Research Project. 1-3 credits.
Conduct a research project to be chosen and completed under guidance
of a graduate faculty member that results in an acceptable technical
report. Notes: No more than a total of three credits may be taken from
within the DAEN program. Offered by Volgenau School of Engineering.
May be repeated within the term for a maximum 3 credits.

Recommended Prerequisite: Graduate Standing, completion of at least
two core courses and a minimum of 12 credits in the DAEN program, and
permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy,
Graduate, Non-Degree or Senior Plus.
Enrollment is limited to Graduate, Non-Degree or Undergraduate level
students.
Students in a Non-Degree Undergraduate degree may not enroll.
Enrollment limited to students in the College of Science, Schar School of
Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

Data Analytics Engineering (DAEN)