Data Science Program Degree Plan of Study

Core Courses

- COMP 7150 - Fundamentals of Data Science – Fall & Spring terms
- COMP 7115 - Database Systems –Fall & Spring terms
- COMP 7745 - Machine Learning – Fall & Spring terms
- MATH 7/8635 - Advanced Statistical Learning I – Fall & Spring terms; summer term periodically
- MATH 7/8636 - Advanced Statistical Learning II – Fall & Spring terms; summer term periodically

Program requirements:

Core requirement – 15 credits:
5 core courses

Elective requirement – 9 credits:
3 courses – same cluster**

The remaining 9-credits can be a combination of the options listed below:

- Masters Project – DATA 7980 (3hrs)
- Master Thesis – DATA 7996 (6hrs)
- Independent Study – DATA 7901 (3hrs)
- Internship – DATA 6911 (1hr, 3hrs, up to 6hrs)
- 1 to 3 elective courses from Clusters

NOTES:

1. COMP 6001 - Computer Programming or equivalent may be taken as a bridge course for those with no or minimal programming background. [intro to programming is also covered in the Fundamentals of Data Science course].

2. Math 6635 and 6636 or equivalent may be taken as bridge courses for those with little or no statistics background.

Core Data Science Cluster (Cluster 1)

- COMP 7116 - Advanced Database Systems – Spring term only
- COMP 7118 - Data Mining – Fall & Spring terms
- COMP 7130 - Information Retrieval/Web Search – Fall term only
- COMP 7720 - Artificial Intelligence – Spring term only
- COMP 7740 - Neural Networks – Fall term only
- COMP 7747 - Advanced Topics in Machine Learning – Fall term only
- COMP 7780 - Natural Language Processing – Spring term only
- MATH 7/8670 - Applied Stochastic Models – 2-3 times per 3 years*
- MATH 7/8680 - Bayesian Inference – 2-3 times per 3 years*
- MATH 7/8657 - Multivariate Statistics – once every 3 years*
- MATH 7647 - Nonparametric Statistics – once every 3 years*
- MATH 7/8660 - Applied Time Series Analysis – 1-2 times per 3 years*
- MATH 7/8685 - Simulation & Computing – 1-2 times per 3 years*
- MATH 7/8695 - Bootstrap/Other Methods – once every 3 years*
- MATH 7/8759 - Categorical Analysis – once every 3 years*
- ESCI 6515 - Geographic Information Science – Fall & Spring terms; summer term periodically

Biomedical Cluster (Cluster 2)

- BIOL 6490 - Introduction to Genomics and Bioinformatics – Fall term only
- BIOL 7060/8060 – Biological Data Analysis – Spring term only
- COMP 7295 - Algorithms in Computational Biology and Bioinformatics – offered periodically*
- PUBH 7/8104 - Large Data Sets – Fall term only
- PUBH 7/8410 – Biostatistical Machine Learning in Public Health – Fall term only
- PUBH 7/8153 - Biostatistics in Bioinformatics – Spring term only
- PUBH7/8150 - Biostatistical Methods I – Summer & Spring (online); Fall term (on campus & online)
- PUBH7/8152 - Biostatistical Methods II – Summer & Fall (online); Spring term (campus & online)
- PSYCH 7302/8302 - Advanced Statistics for Psychology I – Fall & Spring terms

Economics Cluster (Cluster 3)

- ECON 7810/8810 - Econometrics I (Fundamentals of Econometrics) – Spring term only
- ECON 7811/8811 - Econometrics II (Panel & limited dependent variable methods) – Fall term only
- ECON 8812 - Econometrics III (Times Series Analysis) – Spring term only

Business Information Technology Cluster (Cluster 4)

- MIS 7660 - Advanced Data Management – Spring term only
- MIS 7621 - Business Machine Learning II – Fall & Spring terms
- MIS 7720 - Business Artificial Intelligence – Fall & Spring terms
- MIS 7710 - Web Analytics – Fall & Spring terms

Civil Engineering Cluster (Cluster 5)

- CIVL 7360 - Transp Econ & Decision Making – Fall term only
- CIVL 7012 - Prob Meth In Engr – Spring term only
- CIVL 7263 - Intro. to Num. Opt. for Eng. – Offered as needed**
- CIVL 7269 - Quantitative Approaches to Engineering Decision Making - Offered as needed**

Electrical Engineering Cluster (Cluster 6)

- EECE 6235 - Probabilistic System Analysis – Fall & Spring terms
- EECE 6731 - Data Visualization – Fall term only
- EECE 6273 - Database Engineering – offered periodically*
- EECE 6720 - Intro Artificial Intelligence – Spring term only
- EECE 7720 - Artificial Intelligence – Spring term only
- EECE 7740 - Neural Networks – Fall term only
- EECE 7269 - Machine Learning & Applications – offered periodically*
- EECE 7251 - Random Signals & Noise – Fall term only
- EECE 7214 - Image processing – Spring term only
- EECE 7216 - Computer Vision – Spring term only
- EECE 7217 - Multimedia Information Processing – Spring term only
- EECE 7252 - Information theory – offered periodically*
- EECE 7220 - Scientific computing – Spring term only

* - See class availability listings (https://www.memphis.edu/registrar/register/classes.php)
** - Students may inquire w/ dept that offers this course for next offering