**Master of Science in Statistics, Data Science Option**

**Information for Potential VISP+MS Students**

**University of Wisconsin-Madison**

The Statistics Department, UW-Madison has a unique, traditional Master of Science (MS) degree program, highly regarded by employers in industry and government, with options for either statistics or biostatistics. The new Data Science option in the MS program is designed in part for VISP+MS students for the MS portion of their training.

This MS option is being developed to meet demand from non-traditional students for the emerging fields of Big Data and Data Science (also known as data analytics). Big Data are basically too big to manage effectively by traditional approaches, e.g., on a single computer in a few hours. Even if data could fit, the “analytics”--discovery and communication of meaningful patterns in data through design, visualization and inference--take too much space and time for one machine. Therefore, new tools are needed, as well as new ways of thinking about problems. Beyond technical issues, leadership is needed in envisioning, planning, analyzing, and sharing results.

This Data Science MS will ground students in sound data reasoning skills, with a balance of hands-on big data experiences, analytics methods, and basic theory of probability and statistics. All training is integrated into the data practicum, in which students enhance skills in communication, visualization, programming, data management, and analysis of big data. We expect graduates of this program to be well grounded in data science from a statistics perspective, and to be conversant with systems analysts who come from other disciplines. Some key learning objectives are that graduates will be able to

* define key aspects of a problem and conduct appropriate data science, summarizing results with insightful visuals for a broad audience;
* effectively convey the results of data science to decision makers orally and in writing;
* express the complexities and context dependencies, and pros and cons of data science decisions rather than simply presenting and explaining one possible solution; and
* understand the scope of a big data problem, scaling down for initial grasp of patterns and methods of analytics, and scaling up for production to complete a project.

The required coursework for this MS degree with the Data Science option is 30 credits in addition to a minimum admission requirement. VISP+MS students may request transfer of up to 15 credits from their VISP coursework. The MS degree requires a 2-semester mathematical statistics sequence (6 cr; Stat 609-610 for VISP+MS students), a 2-semester statistical methods sequence (6 cr), a course on network skills and data discovery (3 cr), a final data practicum course (3 cr), plus 12 elective credits (typically Stat courses numbered 600 and above).