**UA/Eller MIS Analytics Curriculum (Recommendations highlighted in boldface)**

**Analytics Working Group members: H. Chen, G. Leroy, B. Zhang, Y. Ge, S. Youn. Date: January 23, 2020**

I. BS

- MIS 301 Data Structures (Junming); **need to focus on Python, syntax, ADT, searching/sorting, library, data, statistics, visualization (MIT Guttag book)**
- MIS 331 DBMS (Bin); relations, SQL
- ➔ (arrow indicates prerequisite) MIS 464 **Data Analytics (H Chen, Yong)**; web/data/text mining, DM algorithms, deep learning (CNN, RNN); **possible for two semesters MIS 464A & MIS 464B (Fall, Spring)**
- MIS 373 Operations Management
- ➔ MIS 4XX/5XX, **Optimization/Dynamic Programming (Youn); possible new class by Youn for OM and MIS BS and MS students**
- MIS 461/561, **Data Visualization (Lusi)**; Tableau, Python/R viz, Tufte viz; **need to go beyond Tableau, possible for BS and MS students (with less technical background)**

II. MS

- MIS 507 Intro to Web Computing (Daniel gone); Python, ADT, library, data analytics interface; **possible to turn Daniel's Perl class to Python for all MS & Ph.D. students**
- MIS 531 DBMS (Faiz); relations, SQL
- ➔ MIS 587 Business Intelligence (Yong); data warehouse, KPI, Web analytics; **possible co-listed as MIS 487 elective**
- ➔ MIS 510 **Data & Web Mining (Gondy)**; intro to web, web APIs, DM and text mining; **possible for Fall as Introduction required course**
- ➔ MIS 545 Data Mining for Business (Bin); classification, clustering; **possible to cover deep learning (CNN/RNN) for MS and Ph.D. students; possible co-listed as MIS 445 elective; possible for Spring after MIS 510 as elective**
- ➔ MIS 584 Big Data Technologies (Yong); Hadoop, Spark; MLlib; **possible use of AWS for free; need to combine with MIS 586 Big Data Analytics (Youn; currently wrong SNA content); possible co-listed as MIS 484 elective**
- MIS 5XX, **Optimization (Youn); possible new course, see above**
- MIS 6XX **Social Network Analysis (Sudha); possible for both Ph.D. and selected MS students**

Possible Electives in Other Departments on Campus:

- INFO 457/557, **Deep Learning/NN (Bethard)**; basic NN and DL algorithms
- INFO 450/550, **Intro to AI (Morrison)**; search, logic, Markov DP, HMM, Reinforcement Learning
- LING/CSC 539, **Statistical NLP (Mihai)**; advanced NLP with deep learning, LSTM
- SCO 526, **Research Methods for SNA (Breiger)**; advanced SNA

III. Ph.D.

- MIS 601 **Statistical Foundations of ML (Junmin)**; statistical basis for ML
- MIS 611A Design Science (Yong)
- MIS 611B Behavioral Research (Sue)
- MIS 611C **Econometrics Research (Wei); possible for both Ph.D. and selected MS students**
- MIS 696A Readings in MIS (Jay)
- MIS 696D Data & Web Mining (H Chen, Gondy)
- MIS 696X **OR Research (Youn); possible new course after the successful BS/MS Optimization course**
- MIS 6XX **SNA (Sudha)**, see above; approved recently