CSCE 582: Bayesian Networks and Decision Graphs

1. Course number and name: CSCE 582: Bayesian Networks and Decision Graphs

2. Credit: 3-hrs; Contact: 3 lecture periods of 50 minutes or 2 periods of 75 minutes per week

3. Instructor:

4. Text book: Finn V. Jensen and Thomas D. Nielsen, *Bayesian Networks and Decision Graphs 2nd edition*, Springer-Verlag, New York, NY, 2007.

5. Specific course information
   a. Catalog description: Normative approaches to uncertainty in artificial intelligence. Probabilistic and causal modeling with Bayesian networks and influence diagrams. Applications in decision analysis and support. Algorithms for probability update in graphical models.
   b. Prerequisites: CSCE 350 and STAT 509
   c. CSCE 5xx elective

6. Specific goals for the course
   a. Specific outcomes of instruction are that students will be able to:
      1. Describe the area of uncertainty in artificial intelligence
      2. Understand probabilistic and causal modeling with Bayesian networks
      3. Use the Hugin Bayesian network and influence diagram tool
   b. As an elective this course cannot be counted upon to contribute to the attainment of any student outcome.
   c. Topics covered and approximate weight (14 weeks, 4 hours/week, 56 hours total)
      1. Uncertainty in artificial intelligence (1 hours)
      2. Causal and Bayesian nets (8 hours)
      3. Building models (9 hours)
      4. Learning, adaptation, and tuning (7 hours)
      5. Decision graphs (9 hours)
      6. Belief updating (5 hours)
      7. Reviews and examinations (3 hours)