GIS – 877   Spatial Decision Support System   (3+0=3)

1. **Course Objectives:**
   a. This course is mainly designed to understand the basics of SDSS (Spatial Decision Support Systems) and MCDM (Multi-Criteria Decision Making) and its use in different application areas.

2. **Course Outcomes:**
   a. It is expected that students will have a good understanding of theoretical as well as practical aspects of spatial decision support systems

3. **Course Code:**
   a. GIS – 877

4. **Credit Hours:**
   a. Theory   =   03
   b. Practical   =   00
   c. Total   =   03

5. **Detailed Contents:**
   a. Introduction to information and spatial decision support systems
   b. Modeling decision process, The Systems Perspective of a DSS Python basics concepts
   c. Evolution and Trends in SDSS
   d. Components of SDSS 1
   e. Components of SDSS 2
   f. SDSS Software and Applications
   g. Multi-criteria Decision Analysis
   h. Evaluation Criteria
   i. Criterion Weighting
   j. Cellular Automata
   k. Agent-Based Modeling
   l. Fuzzy Logic
   m. Genetic Algorithm
   n. SDSS Challenges and Future Direction
   o. Cellular Automata
   p. Agent Based Modeling
   q. Fuzzy Logic
   r. Genetic Algorithm

6. **Detail of Lab work, workshop practice, if applicable:**
   a. OpenGeoSuite
   b. PostGIS Workshop
   c. GeoServer
   d. OpenLayers
   e. QGIS Plugins Development
   f. Agent Analysts (ArcGIS)
   g. Agent-based Modeling with JAVA

7. **Textbooks/Reference Books:**
   a. Sugumaran, R. and Degroote, J. (2011) Spatial Decision Support Systems, Principles and Practices.

b. Malczewski, J., & Rinner, C. (2015). Multicriteria decision analysis in geographic information science. New York: Springer.
c. Malczewski, J. (1999) GIS and Multicriteria Decision Analysis.
d. Marakas, G. M. (2003). Decision Support Systems in the 21st Century: Prentice Hall.
e. Related Journal Papers (Class handouts)