

**Unit 1**

**Introduction:** Introduction to Hazards and Disasters, Research Paradigms and Trends, Vulnerability: Definitions and Patterns, Describing hazards

**Unit 2**

**Vulnerability Assessment:** Systems thinking and the ecology of risks, Vulnerability indicators, Measuring vulnerability

**Unit 3**

**Vulnerability, Mitigation and Resilience:** Coping of Communities with Hazards, Community based activities & policy issues

**Unit 4**

**Methods Overview** - Environmental Decision Making, Vulnerability Mapping, Risk Management

**Unit 5**

**Supporting Technologies of Vulnerability Mapping:** GIS-based support, Applied Artificial Intelligence, Lab exercise, Challenges to Tackle, Emerging research areas, emerging technologies

**TEXT BOOKS/ REFERENCES:**

1. "Sustainable hazards mitigation." Rashed, Tarek. *GIS for Sustainable Development*. CRC Press, 2005. 307-330.
2. "An integrative GIS and remote sensing model for place-based urban vulnerability analysis." Rashed, Tarek, et al. *Integration of GIS and remote sensing*. Wiley, Chichester(2007): 199-224.
3. "Assessing vulnerability to earthquake hazards through spatial multicriteria analysis of urban areas." Rashed, Tarek, and John Weeks. *International Journal of Geographical Information Science* 17.6 (2003): 547-576.
4. "In their own words: utilizing weblogs in quick response research." James, A., and Tarek Rashed. *Learning from catastrophe quick response research in the wake of Hurricane Katrina* (2006): 71-96.