CIS 5636 Ad Hoc Networks

● **Course Description:**

Ad Hoc Networks. Credit 3. A comprehensive approach to fundamentals of ad hoc networks including media access protocols, routing protocols, implementation and communication performance. Prerequisite: Discrete Mathematics and Introduction to Data Communications.

● **Textbook:**


Classnotes and handouts

● **References:**


Conference proceedings: INFOCOM, MobiCom, MobiHoc and SenSys

- **Instructors:**
  
  Jie Wu, Laura H. Carnell Professor  
  354 SERC, 215-204-8450, jiewu@temple.edu

- **Office Hours:**
  
  Wu: Tuesday, 3:00 – 5:00 pm

- **Goals:**
  
  An understanding of basic of the ad hoc wireless networking. Covers media access, routing, data management, power optimization, transport protocol, and much more. Current and future developments in the field.

- **Prerequisites by Topics:**
  
  1. Basic graph theory
  2. Fundamentals of computer networks

- **Topics:**
  
  1. Introduction to Wireless Networks
  2. Ad Hoc Wireless Networks and Their Origins
  3. Topics in Infrastructured Networks (3G and 4G)
     - Handoffs
     - Location Management and Localization Service
     - Channel Assignment
     - Cognitive Radio
  4. Topics in Infrastructurless Networks (MANETs)
- Wireless Media Access Protocols
  - Ad Hoc Routing Protocols
  - Multicasting and Broadcasting
  - Information Propagation
  - Data collection, aggregation, and compressive sensing
  - Coverage, Reliability, and QoS
  - Power Optimization
  - Capacity
  - Security - Network Coding

5. Applications
- Sensor Networks and IoTs
- Pervasive Computing
- Delay Tolerant Networks
- Social Networks
- Vehicular Networks

6. Sample On-going Projects

- **Grading Policy:**
  - Midterm: 25%
  - Final: 25%
  - Homework: 30%
  - Project: 20%