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, Chair and Laura H. Carnell Professor

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● **Office Hours:**

Wu: Wednesday, 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 Indoor Wireless Environments
   - Pervasive Computing
   - Peer-to-Peer Networks
   - Delay Tolerant Networks
   - Social Networks
6. Sample On-going Projects