

### Wireless and Mobile Networks

**Syllabus** 

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### 課程內容大綱

- Chapter 1: Introduction of IEEE 802.11
- Chapter 2: Power Saving in IEEE 802.11
- Chapter 3: Basic Routing Protocols for Ad Hoc Mobile Wireless Networks (MANETS)
- Chapter 4: The Broadcast Storm Problem in MANETS





- Chapter 5: Relay-Based Multi-Rate MAC Protocol in MANETS
- Chapter 6: Energy Conservation for Broadcast Routing in MANETS
- Chapter 7: Directional and Smart Antennas
- Chapter 8: An On-Demand, Link-State, Multi-Path QoS Routing in a MANET





### Chapter 9: SOM: Spiral-Fat-Tree-Based On-Demand Multicast Protocol in a Wireless Ad-Hoc Network

- Chapter 10: Spiral-Multi-Path QoS Routing Protocol in Wireless Mobile Ad-Hoc Networks
- Chapter 11: Mobicast Routing Protocol in Wireless Sensor Networks





### Chapter 12: HVE-Mobicast: A Hierarchical-Variant-Egg-Based Mobicast Routing Protocol for Wireless Sensornets

### Chapter 13: Routing Protocols in Vehicular Ah Hoc Networks: A Survey and Future Perspectives





### Chapter 14: A Low Propagation Delay Multi-Path Routing Protocol for Underwater Sensor Networks



### 「「図シ素北大学」 「登録工程学系 Introduction of IEEE 802.11/Bluetooth













### **Relay-Enabled Medium Access Control Protocol for MANETs**





### 「「「」 Directional and Smart Antenna









### Broadcast



Fig. 3: A MST broadcasting tree



# 









(b)





# **Routing/QoS Routing**





### **QoS Routing on MIMO** (Multiple Input Multiple Output) **MANETs**







## Single node architecture







# **Environment Monitoring System**





### Sensors in Unknown Terrain





### **Network architecture**



NTPUCSIE



### Wireless Bio-Sensor







## Mobicast Routing Problem on WSNs









### from Telcordia





### Vehicle Infrastructure Integration (VII) [from Telcordia]







### from Telcordia











### 1. Information flow within the Wireless Sensor Network

- Task: detect & report events to certain gateway sensor node
- 2. Information transition from WSN to Vehicular Ad-Hoc network
  - - Task: Notify Vehicles of events
- 3. Propagation of Information inside Vehicular Ad-Hoc network
  - - Task: Long-range propagation
- 4. Store data from Vehicular Ad-Hoc Network into Wireless Sensor Network
  - Task: Preserve information
- 5. "Physical data transport", "data mule"
  - - Task: Exploit node mobility for data dissemination





### **Underwater Networks**

### Underwater Acoustic Sensor Networks (UW-ASN)







# A group of autonomous underwater vehicles (AUV) in underwater





Group photo of the underwater sensor nodes. (a) the static sensor nodes (Aquaecks) and a mobile node (Amour AUV). (b) a mobile node (Starbug AUV).





(a)





# (a) Starbug in Moreton Bay,Brisbane. (b) Starbug in the pool.









### **Mote Kits**





### 學期成績計算方法

- 期中考 (30%)
- 期末考 (30%)
- Homeworks (10%)
- Oral presentation (10%)
- 無線感測網路實驗 (20%)

