

**WESTERN MICHIGAN UNIVERSITY**  
**in Cooperation with BMG Music**  
**Proudly Presents Gershon live at**  
**the Village Gate:**  
**Great Wireless Tales and Other Favorites**

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Cellular Telephony

- Cellular network design
- Cell splitting, principle of
- Dynamic allocation, principle of
- fixed vs. demand assignment, principle of
- Four parts to a cellular system
  1. Cell Site
  2. Cellular Tower
    - (Base Transceiver Station (BTS))
  3. Mobile Telephone Switching Office (MTSO)
  4. Cellular Mobile Telephone
- Frequency reuse in nonadjacent cells
- GSM standard
- Locating and handoffs between cells, principle of
- Mobile wireless communication standards, 4 generations
- Multiple access schemes, CDMA, FDMA, TDMA
- SIM card
- Smart phones

Satellite Communications

- Antenna Subsystems
- C and Ku bands
- Direct Broadcast Satellite (DBS)
- Earth Station Design and Performance
  - Parabolic dish, principle of
  - Low noise block converter (LNB)
- Footprint
- Geosynchronous
- Global Positioning Satellites (GPS)
- GOES and NOAA Weather Satellites
- Low Earth Orbiting Satellites (LEOs)
- Mobile Satellite Communication
- Point-to-Multipoint Distribution
- Polar Orbits
- Satellite comm. Advantages
- Satellite comm. Applications
- Satellite comm. Stabilization Designs
  - Body
  - Spin

- Space Station Keeping
- Telemetry, Tracking and Command
- Tradeoff in Design (big satellite / small earth stations)
- Transponder
- Very Small Aperture Terminals (VSAT)
- Uplink and Downlink Segments

## Intelligent Networking

- Critical infrastructure
- Intelligent Networking defined
  - What makes an intelligent network, intelligent?
  - Assumptions
- Redundancy
- Role of systems theory
- System Structures and Processes
  - Hierarchical Ordering
  - Interdependency
  - Exchange
  - Equifinality
  - Redundancy
  - Adaptation
  - Network Holism
  - Permeability
    - Permeability Predicament
- System Consequences
  - Decentralization
  - Immediacy
  - Interactivity
  - Personalization
  - Mobility
  - Convergence
  - Virtual Communication
  - Artificial Intelligence



- Blue Ocean Strategy, principle of
  - W. C. Kim and R. Mauborgne
- High Tech – High Touch, principle of
  - John Naisbitt

## Innovation

- Disruptive v. sustaining innovation
- Innovation and design, 3 kinds:
  - Business model innovation
  - Process innovation
  - Product innovation
- Value innovation, principle of