



# Computer Networks Design

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## Course Overview

Dr.-Ing. Ali Diab

# Outline

- Motivation
- Goals
- Organizational Stuff
- How to Handle the Course
- Conclusions

# Motivation

- Communication networks are essential, why?
  - They experience rapid and enormous growth
  - The Internet is everywhere
  - Crucial factor of today's economy
- How will future networks look like?
  - Heterogeneous
    - Including fixed and mobile networks
    - Interconnected via IP core (termed all-IP)
  - High bandwidth, reduced costs, low delays, always-on connectivity
  - Simple deployment and introduction of new entities, services, etc.
- What are major challenges to overcome?
  - Mobility management, Quality of Service (QoS), security
  - Heterogeneity, complexity, flexibility, extensibility, deployability
  - Self-organization, ...

# Goals

- Provision of up-to-date knowledge concerning advanced communication technologies
- In-depth understanding of research issues in communication networks
- Focus on
  - Designing a network
    - Plan, devices, cables, etc.
  - The Internet
    - Medium Access Control (MAC)
    - Mobility management
  - Advanced issues
    - Quality of Service
    - Security

# Organizational Stuff

- Lecturer contact information
  - Dr.-Ing. Ali Diab
  - email: [dring\\_alidiab@outlook.de](mailto:dring_alidiab@outlook.de) (Subject: Communication networks design)
  - email: [adiab@albaath-univ.edu.sy](mailto:adiab@albaath-univ.edu.sy) (Subject: Communication networks design)
- Course prerequisites
  - Basics in wired as well as wireless communication
  - ISO/OSI reference model
  - TCP/IP protocol suite
- Course budget
  - 1 Lecture + 1 appointment for praxis per week

# How to Handle the Course

- Cover your knowledge holes
  - Go through basics
- Go through the material provided
  - Will be electronically provided
  - References will be listed for each lecture
    - If possible, electronic copy will be provided
  - Search the Internet for knowledge if required
- Questions catalog will be provided
  - Cover 50 – 60 % of the course
- Exam
  - ??????

# Conclusions

- Communication technologies are evolving more and more
- Major challenges to overcome?
  - Spectrum utilization, cognitive radio, ...
  - Mobility management, QoS, security
  - Heterogeneity, complexity, flexibility, extensibility, deployability
  - Self-organization, ...
- Research in mobile communication technologies is interesting and is a good mark on your CVs
  - Research projects
  - Bachelor projects
  - Master projects
  - PhD
  - ...