Institute of Telecommunications
Warsaw University of Technology
2019

internet technologies and standards

- Piotr Gajowniczek
- Andrzej Bąk
- Michał Jarociński

course information

course organization

- *lecturers*:
  - Piotr Gajowniczek, PhD, room 346a (temp. CS304), p.gajowniczek@tele.pw.edu.pl
    - consultations: Thursdays, 12-14
  - Andrzej Bąk, PhD, room 346a (temp. CS304), bak@tele.pw.edu.pl
    - consultations: Thursdays, 12-14
  - Fernando Solano, PhD [IoT guest lecture]
- *communication:*
  - web page: https://studia3.elka.pw.edu.pl/file/19Z/103A-CTxxx-ISA-EINTE/priv/
  - mailing list: 103A-CTxxx-ISA-EINTE@elka.pw.edu.pl
- *evaluation criteria:*
  - 2 written tests: 25% each
  - lab exercises: 50%
  - possibly additional points for lecture attendance (max. 10%)

course materials

- *textbooxs:*
  - some available also in Kindle editions:
    - *Computer Networking: A Top-Down Approach Featuring the Internet (7th Edition)* by James F. Kurose, Keith Ross; Pearson Addison Wesley, 2018.
    - *An Introduction to Computer Networks* by Peter L. Dordal, 2018.
    - *Internetworking with TCP/IP Volume One (6th Edition)* by Douglas E. Comer; Addison-Wesley, 2013.
  - Internet Standards, RFCs, etc.
  - lecture slides
  - lab exercise manuals

Many slides presented in this course are exact or adapted versions of slides available as the companion to the following book by Jim Kurose and Keith Ross:

Computer Networking: A Top Down Approach
6th edition, Addison-Wesley, March 2012

the goal and content of the course

- *the goals*:
  - to review selected technologies that make a foundation of today's Internet
  - to dive deeper into core network technologies of large ISPs
  - to discuss the challenges of the modern Internet
- *the content*
  - introduction: Internet structure, protocols, and layers
  - Internet data link layer – overview
  - Internet network layer: IP addressing and subnetting, NAT, IPv6
  - Internet routing principles, OSPF protocol *[Lab 1 - remote]*
  - Inter-ISP routing: BGP protocol *[Lab 2 - remote]*
  - ISP network technologies: MPLS *[Lab 3 - remote]*
  - Internet transport layer: principles, UDP & TCP *[Lab 4 – remote, or …]*
  - Internet application layer: DNS, HTTP, VoIP, Video Streaming *[…Lab 4 – at faculty]*
  - CDN and Internet datacenters: architecture overview
  - IOT: the Internet Of Things (guest lecture) *[Lab 5 - at faculty]*

preliminary schedule

03.10	Introduction, Layered model	
10.10	L2, IP, NAT	
17.10	IPv6, OSPF	
24.10	OSPF	L1: OSPF
31.10	BGP	
07.11	BGP	L2: BGP
14.11	Test 1	
21.11	MPLS	L3: MPLS
28.11	Sockets, TCP, UDP	
05.12	TCP, UDP	L4: TCP
12.12	DNS, HTTP, Streaming	
19.12	CDN, DataCenters	
26.12		
02.01		
09.01		
16.01	IoT	
23.01	Test 2	
30.01	IoT Lab	L5: IoT

- *remote labs*:
  - it is obligatory to send the report
  - you may not send the report from one lab (it is treated as non-presence)
- *at faculty labs*
  - obligatory (presence is required)