Blended Intensive Program (BIP)

Main topic:

Network Technologies

BIP number:

2024-1-CZ01-KA131-HED-000199317-1

Date:

Virtual activities (online): 18. 8. 2025

Physical activities: 25. 8. – 29. 8. 2025

Schedule

Day	Group	Morning	Afternoon
Monday 18. 8.	1 + 2	9:00 – 11:00 Virtual activity (online via Microsoft Teams)	
Monday 25. 8.	1	9:00 – 12:30 Computer Networks (Lab EB215)	14:30 Excursion in National Supercomputing Center 17:00 Minigolf + refreshment
	2	9:00 – 12:30 Cyber Security in Communications (Lab EB210)	
Tuesday 26. 8.	1	9:00 – 12:30 Cyber Security in Communications (Lab EB210)	15:00 Excursion in Dolní Vítkovice (technical national cultural heritage)
	2	9:00 – 12:30 Computer Networks (Lab EB215)	

Wednesday 27. 8.	1	9:00 – 12:30 Wireless Networks (Lab EB209)	15:00 Excursion in mobile base station
	2	9:00 – 12:30 Optical Networks (Lab EB316)	
Thursday 28. 8.	1	9:00 – 12:30 Optical Networks (Lab EB316)	14:30 Esport (Lab EB317)
	2	9:00 – 12:30 Access Networks (Lab EB211)	14:30 Multimedia laboratory (Lab N315)
Friday 29. 8.	1	9:00 – 12:30 Access Networks (Lab EB211)	14:30 Multimedia laboratory (Lab N315)
	2	9:00 – 12:30 Wireless Networks (Lab EB209)	14:30 Esport (Lab EB317)

The topic of **computer networks** is focused on IP-based communication networks which are currently the most widespread. Attention is paid to IPv4 and IPv6 addressing, routing protocols and VLANs (Virtual Local Area Network). The emphasis is also placed on the practical aspects of building such computer networks.

The topic of **cyber security in communications** is devoted to the evolution of the cyber security from historical milestones, through modern cryptographic methods and technologies that we use every day without even knowing it, to an outline of the future of cryptography in the form of quantum key distribution and risks in the form of using a quantum computer for cryptanalysis of current algorithms. As part of the topic, specific examples of historical, current, and future communication security techniques will be presented, both in the field of authentication, authorization, and encryption.

Students will learn the basic aspects of **wireless networks**. Part of the work will be practical tasks focused on the analysis of mobile network parameters, especially 5G, software simulation of coverage, or the use of millimeter wave for 5G using the campus private network. The planned excursion will then suitably complement the individual tasks with a visit and tour of the base station of the mobile operator, including professional commentary.

The topic of **optical networks** focuses on GPON (Gigabit Passive Optical Network) technology, which allows users to connect to the Internet at multigigabit speeds using optical fiber. This technology is gradually becoming the dominant method of high-speed Internet connection.

The topic of **access networks** deals with practical measurements in the xDSL network (ADSL, VDSL), configuration of DSLAM (Digital Subscriber Line Access Multiplexer), analysing services depending on the distance between the user and DSLAM.

In the **multimedia laboratory,** students can familiarize themselves with the work in a small multimedia studio, cameras, sound, lighting, online editing, broadcasting live stream.

Contact:

Petr Machník

Department of Telecommunications

Faculty of Electrical Engineering and Computer Science

VSB – Technical University of Ostrava

17. listopadu 2172/15

708 00 Ostrava, Czech Republic

e-mail: petr.machnik@vsb.cz

phone: +420 597 325 841