Course title: Software Defined Networking	Neptun code: GEIAL482-a

Course coordinator: Dr. Zsolt Csaba Johanyák, PhD, dr. habil., professor (NJE)

type of lesson and number of lessons: **lecture (2)**

method of evaluation: colloquium

curriculum location of the subject: (autumn/spring semester): autumn and spring

pre-study conditions *(if any)*: -

The task and purpose of the subject:

The objective of this course is to provide a comprehensive understanding of Software Defined Networking (SDN) by exploring its history, key features, advantages, and challenges.

Course description:

Students will gain insights into various SDN architectures and frameworks, such as OpenFlow, Cisco ACI, and VMware NSX, learning about their benefits and limitations. The course will cover practical aspects of SDN emulation and programming, including hands-on experience with SDN controllers (OpenDaylight, Floodlight) and switch emulators (Mininet, OFSwitch) using programming languages such as Python and P4. Additionally, students will learn about SDN management and monitoring tools, as well as security challenges and mechanisms, and best practices for ensuring secure SDN deployments. By the end of the course, students will be equipped with the knowledge and skills to design, implement, and manage SDN solutions effectively.

Required literature:

1. Paul Goransson Chuck Black Timothy Culve: Software Defined Networks. A Comprehensive Approach. Second Edition, Elsevier, 2017, ISBN: 978-0-12-804555-8

Recommended literature:

1. Open Networking Foundation (ONF) SDN Fundamentals https://opennetworking.org/

2. A Comparison of SDN and Traditional Networking"" by Cisco, https://www.geeksforgeeks.org/difference-between-software-defined-network-and-traditional-network/

3. P4 Language Specification https://p4.org/p4-spec/docs/P4-16-v1.0.0-spec.html