Optical Communication

Secondary Specialization, MSc Electrical Engineering

Introduction

Modern telecommunication nowadays is unimaginable without the use of optical transmission. Behind today's high speed communication systems (broadband internet, mobile telecommunications, 5G, digital content services, etc.) optical networks can always be found under some guise. Therefore, it is useful and important for electrical engineers to possess a device- and system-level knowledge of optical networks. The aim of the specialization is to introduce the operation and design of optical devices, systems and networks.

Knowledge to learn

- Application-level knowledge of operation and design of modern optical communication devices and systems
- Design of physical layers of optical networks
- Optical measurement technology
- Simulation of optical communication devices and system

Subjects and lecturers

The four subjects give insight from different viewpoints to the optical communication.

Prof Tibor Berceli

Optical Networks Elements (VIHVMA05): The subject provides an overview of the construction, operation and telecommunication characteristics of passive and active elements used in optical communication transmission systems.

Optical Systems and Applications (VIHVMA06): The subject provides an overview from the single-channel point-to-point connection to the present and future multi-channel, high-speed backbone network; from the core network to access networks. Furthermore, special topics like Radio over Fiber and Cable Television systems, are also discussed.

Dr Attila Hilt

Optical Networking Architectures (VITMMA12): The aim of the subject is to provide the basic knowledge on design, architecture, operation, maintenance, management, control, routing, protection, traffic engineering in multi-layer and multi-domain access - metro - backbone networks. The subject will also overview the basics of mathematical modeling of optical networks, that will enable understanding some of the above functionality.

Prof Tibor Cinkler

Optical Networks Laboratory (VHVMB03): Measurements to be made relate to the subject matter of the specialization of Optical Networks Elements, to better understand and deepen the knowledge acquired.

Positions, traineeships

Nowadays not only the backbone networks, but data-centers, cloud networks, access networks, and more and more, LANs are built on optical transmission. The knowledge acquired at the Secondary Specialization enables one the get a position at a network provider, device manufacturer company, or research institute.