

## Advanced lecture on optical communication system

2 units (selection)

Nobuo Goto · PROFESSOR / OPTICAL MATERIALS AND DEVICES, OPTICAL SYSTEMS ENGINEERING, SYSTEMS INNOVATION ENGINEERING

**Target** Development and future prospect of broadband large-capacity networks are studied. In particular, photonic network and its key elements such as photonic router and switch are discussed with their principle.

**Outline** 1. Optical network, 2. Optical communication technology, 3. Development of bandwidth and speed in optical networks, 4. Network layer model and protocol, 5. Routing algorithm, 6. Router, 7. Photonic networks

**Style** Lecture

**Goal** 1. Understanding of architecture of optical network and functions of its elements, 2. Understanding of fundamental technology in optical fiber amplifiers and wavelength division multiplexing, 3. Understanding of hierarchical model and protocol for network, 4. Understanding of functions in routers, 5. Understanding of development in photonic networks.

**Schedule**

1. Feature of optical network
2. Optical transmission system
3. Optical fiber amplifiers
4. Wavelength division multiplexing technology
5. Development of electronic devices and its rules
6. Internet and broadband networks
7. Wavelength division multiplexing and wavelength routing
8. Development of information networks
9. Hierarchical model and protocol
10. Fundamental functions of router
11. Development of high-speed routers
12. Protocol and algorithm in IP routing
13. Photonic networks
14. Photonic routing technology
15. Summary
16. Report hand in

**Evaluation Criteria** Attitude toward lecture (40%), Report (60%). More than 60% of the total score is required.

**Textbook** Y. Suematsu and K. Iga, Introduction to optical fiber communication, Ohm-sha, 2006

**Reference** Y. Suematsu and K. Kobayashi, Photonics-Optical electronics and its development, Ohm-sha, 2007

**Contents** <http://cms.db.tokushima-u.ac.jp/cgi-bin/toURL?EID=216830>

**Contact**

⇒ Goto (opt408, +81-88-656-9415, goto@opt.tokushima-u.ac.jp) MAIL (Office Hour: 8:30-17:00)