

Course	Name	: Satellite Network and Remote Sensing
	Code	: EE184939
	Credits	: 3
	Semester	: Elective

Description of Course

Satellite Networking and Remote Sensing courses cover two topics. In the first part, students learn about the basic theory and design of satellite systems and networks, focusing on communication satellites and satellites for remote sensing. In the second part, students learn about various remote sensing systems and methods, focusing on the concepts of technology and their applications.

Learning Outcomes

Knowledge

(P03) Mastering the concepts and principles of design procedure in power systems, control systems, multimedia telecommunications, or electronics.

Specific Skill

(KK01) Able to formulate engineering problems in power systems, control systems, multimedia telecommunications, or electronics.

(KK02) Able to describe the completion of engineering problems in power systems, control systems, multimedia telecommunications, or electronics.

(KK03) Able to describe system design for problem solving in power systems, control systems, multimedia telecommunications, or electronics by concerning technical standards, performance aspect, reliability, ease of application, and assurance of sustainability.

General Skill

(KU05) Able to take decisions appropriately in the context of problem solving in the area of expertise based on the results of information and data analysis.

Attitude

(S09) Demonstrating attitude of responsibility on work in his/her field of expertise independently.

Course Learning Outcomes

Knowledge

Mastering the concept of satellite networks and remote sensing.

Specific Skill

Able to design satellite communication links, satellite networks, and remote sensing systems.

General Skill

Able to do accurate link budget calculations with the help of software.

Attitude

Able to show a responsible attitude in designing satellite networks and remote sensing systems properly and correctly.

Main Subjects

1. Satellite concepts, systems and subsystems
2. Satellite orbit and direction of earth station antenna

3. Link budget for satellite communication
4. Satellite constellations and multi-beam satellite networks
5. Multiple access and interference communication systems
6. Concepts (electromagnetic wave interactions and objects) and remote sensing systems
7. Satellite based remote sensing
8. Aerial photography
9. Radar and lidar
10. Thermal imagery
11. Remote sensing application

Reference(s)

- [1] Dennis Roddy, *Satellite Communications*, ed. 4, McGraw-Hill, 2006.
- [2] Timothy Pratt, Charles Bostian, Jeremy Allnutt, *Satellite Communications*, ed. 2, Wiley, 2002.
- [3] Erich Lutz, Markus Werner, Axel Jahn, *Satellite Systems for Personal and Broadband Communications*, Springer-Verlag, 2000.
- [4] James Campbell, Randolph Wynne, *Introduction to Remote Sensing*, ed. 5, Guilford Press, 2011.
- [5] Arthur Cracknell, Ladson Hayes, *Introduction to Remote Sensing*, ed. 2, Taylor and Francis, 2007.

Prerequisite(s)

EE184531 Communication Systems I
EE184632 Wave Propagation
EE184532 Electromagnetic Wave Transmission and Antennas
