

Course	Name	: Wave Propagation
	Code	: EE184632
	Credits	: 3
	Semester	: VI

Description of Course

The course discusses the propagation of electromagnetic waves from the spectrum of the Extra Low frequency (ELF), Very Low frequency (VLF), Low Frequency (LF), Middle Frequency (MF), High frequency (HF), Very High frequency (VHF), Super High frequency (SHF) up to Extra High frequency (EHF), prediction of propagation attenuation in each of these frequency bands, wave propagation mechanism in each of these frequency bands and transmission link design for each of these frequency bands.

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.

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 wave propagation in all frequency spectrums.

Specific Skill

Able to calculate or predict attenuation when the wave propagates.

General Skill

Able to analyze and design a radio transmission link between two points.

Main Subjects

1. Wave propagation in free space.
2. Refraction by the atmosphere layer
3. Reflection
4. Diffraction
5. Rain Effect
6. Surface wave and Ionospheric wave
7. Noise
8. Multi-channel canal mathematical modeling

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9. Mobile radio propagation channels: large scale attenuation
 10. Mobile radio propagation channel: multipath fading
 11. Measurement of radio propagation channels
 12. Underwater acoustic wave
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Reference(s)

- [1] J. D. Parsons, Mobile radio propagation channel, John Wiley & Sons, 2000.
 - [2] Simon R. Saunders , Alejandro Aragon-Zavala, Antennas and Propagation for Wireless Communication Systems, John Wiley & Sons, 2007.
 - [3] Robert E. Collin, Antenna and Radiowave Propagation, Mc Graw Hill, 1985.
 - [4] Theodore S. Rappaport, Wireless Communications Principles and Practice, 2nd ed., Dorling Kindersley, 2009.
 - [5] Xavier Lurton, An Introduction to Underwater Acoustics, Springer-Praxis, 2002.
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Prerequisite(s)

EE184303 Electromagnetic Fields
