

COURSE	Name	: Microwave Circuits
	Code	: EE185631
	Credit(s)	: 2
	Semester	: (Elective Course)

Description of Course

The Microwave Circuits course is an elective course that learns frequency spectrum theory, the theory of square, circular and elliptical waves, microwave sources: klystron, magnetron, Gunn diode, microwave integrated circuit, microwave amplifier theory: TWT, klystron, magnetron, LNA, parametric amplifier, concept of Mixer and modulator, passive components: attenuators, termination, short, joint, rotary joint, detectors, transitions, couplers, directional couplers, insulators, circulators, standing wave detectors, sliding crew tuners, phase shifter, magic tee, splitter, combiner, horn, resonator, window, slotted line, filter and YIG filter, microstrip technology, and measurement techniques.

Learning Outcomes

Knowledge

(P01) Mastering the concepts and principles of science in a comprehensive manner, and to develop procedures and strategies needed for the analysis and design of systems related to the field of power systems, control systems, multimedia telecommunications, electronics, intelligent multimedia network, or telematics as a preparation for further education or professional career.

Specific Skill

(KK01) Being able to formulate engineering problems with new ideas for the development of technology in power systems, control systems, multimedia telecommunications, electronics, intelligent multimedia network, or telematics.

General Skill

(KU11) Being able to implement information and communication technology in the context of execution of his/her work.

Attitude

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

Course Learning Outcomes

Knowledge

Mastering the concept of microwave systems and the components of a microwave system, and the working principle of microwave systems.

Specific Skill

Able to design microwave systems and their applications.

General Skill

Able to use knowledge about microwaves for implementation in everyday life.

Attitude

Demonstrating attitude of responsibility for work in his/her area of expertise independently.

Working together to be able to make the most of their potential.

Main Subjects

1. Frequency spectrum, theoretical review on square, circular and elliptical wave
2. Microwave source
3. Microwave amplifier
4. Mixer and modulator
5. Passive component
6. Microstrip technology
7. Measurement technique

Reference(s)

- [1] Robert E. Collin, Fundamental for Microwave Engineering 2nd Edition, IEEE Press, 2000
- [2] Pekka Eskelinen, Introduction to RF Equipment and System Design, Artech House, 2004
- [3] David Pozar, Microwave Engineering 2nd Edition, John Wiley, 1998
- [4] Allan Scout, Understanding Microwave, John Wiley, 1993 (pp10, 29, Ch.6 (-6.2))
- [5] Devendra K. Misra, Radio Frequency and Microwave Communication Circuits : Analysis and Design – 2nd edition, John Wiley, 2004
- [6] I. A. Glover, S. R. Pennock and P. R. Shepherd, Microwave Communications Engineering Volume 1 : “Microwave Devices Circuits and Subsystems, John Wiley, 2005

Prerequisite(s)

Propagation and Radiation