

# Guided Wave Circuit Theory

course for Dept. EEE & Dept. PE

Tokyo Institute of Technology

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Detailed lecture notes are available on my web site.

# Class schedule

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week    topics included

- 1    Introduction to waveguide
- 2    Transmission line
- 3    Waveguide composed of conductor (coaxial line, micro-strip line, and metallic hollow waveguide)
- 4    Dielectric waveguide
- 5    Guided wave in an optical fiber (eigen mode and dispersion)
- 6    Coupled mode equation
- 7    Guided waves in periodic structures
- 8    Scattering matrix
- 9    Eigen excitation and eigen value
- 10   Coupled waveguide (directional coupler)
- 11   Resonators, filter and MUX/DEMUX
- 12   Nonreciprocal circuits (isolators and circulators)

## References

D.Marcuse : “Theory of dielectric optical waveguides,” Academic Press

R.E.Collin : “Field theory of guided waves,” McGraw-Hill

J.Helszajn : “Passive and active microwave circuits,” John Wiley & Sons

## Notes

Download the lecture note from my web site, and bring its printed matter in every class.

Web site:

[http://mizumoto-www.pe.titech.ac.jp/~tmizumot/lecture\\_note/guided\\_wave\\_circuit\\_theory/index.html](http://mizumoto-www.pe.titech.ac.jp/~tmizumot/lecture_note/guided_wave_circuit_theory/index.html)

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