Course Title Communication Networks and Transmission Lines

Course Number LE325

Credit Hours 45 hours/ 1 semester

Prerequisites LE240 (Electrical Circuit Analysis)

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Title Lecturer
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Course Descriptions Wire and wireless communication; wire communication network; Y, Z, F, G, H matrix, relation; connection and basic circuits, network transformation, transmission quantities, signal transmission circuit techniques, wave filters, attenuator, impedance matching, transmission line theory, equation, solution for low, medium, high frequencies, primary and secondary constant; incident and reflected waves, standing wave ratio, line characteristics for open, short, terminated load, lossless, and lossy lines; reflections in time domain, bounce diagrams, near-end and far-end crosstalk, differential signaling, composite line, types of cable, and unshielded twisted pair, coaxial cable; current cable standards.

Tentative Course Schedule Course overview (1 week) Communication networks (3) Wave filters (2) Attenuator (1) —**MIDTERM EXAM**— Transmission lines theory (3) Smith chart and applications (1) Impedance matching (2) Crosstalk (1) Differential signaling & Cables (1)

Textbook and Reference

[1] C. R. Paul and S. A. Nasar, *Introduction to Electromagnetic Fields 2nd*, McGraw-Hill, 1987.
[2] W. C. Johnson, *Transmission Lines and Networks*, McGraw-Hill Book, 1988.
[3] D. M. Pozar, *Microwave Engineering*, 3rd, Wiley, 2004.
[4] Lecture Notes

Grading

Attendance & Quiz	10%
Assignments	10%
Midterm	35%
Comprehensive Final	45%
Total	100%