

OTL751 TELECOMMUNICATION SYSTEM MODELING AND SIMULATION

DETAILED SYLLABUS

OBJECTIVES:

- To gain knowledge in modeling of different communication systems.
- To know the techniques involved in performance estimation of telecommunication systems.
- To learn the use of random process concepts in telecommunication system simulation.
- To study the modeling methodologies of a telecommunication system.
- To study about the QAM digital radio link environment.

UNIT I SIMULATION OF RANDOM VARIABLES RANDOM PROCESS

Generation of random numbers and sequence – Gaussian and uniform random numbers
Correlated random sequences – Testing of random numbers generators – Stationary and uncorrelated noise – Goodness of fit test.

UNIT II MODELING OF COMMUNICATION SYSTEMS

Radio frequency and optical sources – Analog and Digital signals – Communication channel and model – Free space channels – Multipath channel and discrete channel noise and interference.

UNIT III ESTIMATION OF PERFORMANCE MEASURE FOR SIMULATION

Quality of estimator – Estimation of SNR – Probability density function and bit error rate – Monte Carlo method – Importance sampling method – Extreme value theory.

UNIT IV SIMULATION AND MODELING METHODOLOGY

Simulation environment – Modeling considerations – Performance evaluation techniques – Error source simulation – Validation.

UNIT V CASE STUDIES

Simulations of QAM digital radio link environment – Light wave communication link – Satellite system.

SSLC, HSE, DIPLOMA, B.E/B.TECH, M.E/M.TECH, MBA, MCA

Notes
Syllabus
Question Papers
Results and Many more...

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OUTCOMES:

At the end of the course, students would be able to

- Apply the constituents of a telecommunication systems.
- Analyze various modeling methodologies and simulation techniques.
- Estimate the performance measures of telecommunication systems.
- Apply system modeling in telecommunication.
- Demonstrate light wave communication and satellite communication systems.

TEXTBOOKS:

- 1.Jeruchim MC Balaban P Sam K Shanmugam, "Simulation of communication Systems: Modeling, Methodology and Techniques", Plenum press, New York,2002
- 2.Jerry banks & John S Carson, "Discrete Event System Simulation", Prentice Hall of India,1996

REFERENCES:

1. Averill M Law, "Simulation Modeling and Analysis",McGraw-Hill Inc,2007 Geoffrey Gorden, "System Simulation",Prentice Hall of India,1992
- 2.Turin W, "Performance Analysis of Digital Communication Systems", Computer Science Press, New York,1990