

## UNIT - 6

Non - separable multidimensional wavelets, wavelet packets. Wavelets Transform and Data Compression: Introduction, transform coding, DTWT for image compression (i) Image compression using DTWT and run-length encoding.

## UNIT - 7

(i) Embedded tree image coding (ii) compression with JPEG audio compression (iii) Audio masking, (iv) Wavelet based audio coding.

## UNIT - 8

**CONSTRUCTION OF SIMPLE WAVELETS:** Construction of simple wavelets like Harr and DB1. Other Applications of Wavelet Transforms: Introduction, wavelet de-noising, speckle removal, edge detection and object isolation, Image fusions, Object detection by wavelet transforms of projections.

### TEXT BOOK:

1. **Wavelet transforms- Introduction to theory and applications**, Raghuveer M.Rao and Ajit S. Bapardikar, Person Education, 2000.

### REFERENCE BOOKS:

1. **Wavelet transforms**, Prasad and Iyengar, John Wiley India Pvt. Ltd, 2007.
2. **Wave-let and filter banks**, Gilbert Strang and Nguyen Wellesley Cambridge press, 1996
3. **Insight into WAVELETS from theory to practice**, K.P. Soman and K.L. Ramchandran, Eastern Economy Edition, 2008

## MODELING AND SIMULATION OF DATA NETWORKS

Subject Code	: 10EC766	IA Marks	: 25
No. of Lecture Hrs/Week	: 04	Exam Hours	: 03
Total no. of Lecture Hrs.	: 52	Exam Marks	: 100

---

## UNIT – 1&2

**DELAY MODELS IN DATA NETWORKS:** Queuing Models, M/M/1, M/M/m, M/M/∞, M/M/m/m and other Markov System, M/G/1 System, Networks of Transmission Lines, Time Reversibility, Networks of Queues.

#### **UNIT – 3&4**

**MULTI-ACCESS COMMUNICATION:** Slotted Multi-access and the Aloha System, Splitting Algorithms, Carrier Sensing, Multi-access Reservations, Packet Radio Networks.

#### **UNIT – 5&6**

**ROUTING IN DATA NETWORKS:** Introduction, Network Algorithms and Shortest Path Routing, Broadcasting Routing Information: Coping with Link Failures, Flow models, Optimal Routing, and Topological Design, Characterization of Optimal Routing, Feasible Direction Methods for Optimal Routing, Projection Methods for Optimum Routing, Routing in the Codex Network.

#### **UNIT – 7&8**

**FLOW CONTROL:** Introduction, Window Flow Control, Rate Control Schemes, Overview of Flow Control in Practice, Rate Adjustment Algorithms.

#### **REFERENCE BOOKS:**

1. **“Data Networks”** Dimitri Bertsekas and Robert Gallager, 2<sup>nd</sup> edition, Prentice Hall of India, 2003.
2. **“High-Speed Networks and Internets”** William Stallings, Pearson Education (Asia) Pte. Ltd, 2004.
3. **“High Performance Communication Networks”** J. Walrand and P. Varaya, 2<sup>nd</sup> edition, Harcourt India Pvt. Ltd. & Morgan Kaufman, 2000.



H. O. D.

Dept. Of Electronics & Communication  
Jawahar Education Society's Institute of Technology  
Bajaj Nagar, Sector-10, Gurgaon, Haryana