TECHNO INDIA UNIVERSITY

W E S T B E N G A L

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4-Year Bachelor of Technology (B.Tech.) Curriculum and Syllabus for Electronics & Communication Engineering (ECE)

SIXTH SEMESTER

Sl No	Code	Subject	Contacts			Credits
			L	T	P	
A. Theory						
1	TIU-UEC-T302	Digital Communication	3	1	0	4
2	TIU-UEC-T304	Digital Signal Processing	3	1	0	4
3	TIU-UEC-T306	Computer Networking	3	1	0	3
4	TIU-UCS-T310	Object Oriented Programming	3	1	0	3
5	TIU-UEN-T300	CASD	2	1	0	3
6	TIU-UMG-T312	Industrial Management	3	1	0	3
B. Practical						
1	TIU-UEC-L302	Digital Communication Lab	0	0	3	2
2	TIU-UEC-L304	DSP Lab	0	0	3	2
3	TIU-UEC-L306	Computer Networking Lab	0	0	3	2
4	TIU-UCS-L310	Object Oriented Programming Lab	0	0	3	2
C. Sessionals						
1	TIU-UES-S398	Entrepreneurship Skill Development	0	0	0	2
Total						30

CASD
TIU-UEN-T300
L-T-P: 2-1-0   **Credits: 3**

The Course material is announced at the start of each semester considering the changing demand.

Digital Communication
TIU-UEC-T302
L-T-P: 3-1-0   **Credits: 4**

Module-1
Digital signals and their spectra; Concepts of information and entropy;
Module-2
Source coding: Coding theorem, fixed length codes; variable length codes; Quantization of signals; Waveform coding techniques: PCM, DPCM, ADPCM, DM, ADM;
Module-3
Baseband transmission: intersymbol interference, noise, eye pattern, BER analysis, Optimum filtering, equalization techniques; Clock recovery;
Module-4
Line coding techniques: Binary and multilevel line codes; Digital modulation schemes: Binary modulation schemes- ASK, PSK, FSK, DPSK; M-ary modulation schemes: QPSK, pi/4 QPSK, MSK; QAM: generation and demodulation schemes, carrier recovery techniques, BER analysis of digital modulation systems; Shannon's capacity theorem and spectral efficiency of digital modulation schemes.

Recommended Textbooks:
1. W. Tomasi, "Electronic Communication Systems: Fundamentals through Advanced", Pearson
2. H. Taub& D. L. Schilling, "Principles of Communication Systems", Tata McGraw Hill
3. S. Haykin& M. Moher, "Introduction to Analog & Digital Communications", John Wiley
4. S. Haykin, "Communication Systems", John Wiley
5. S. Haykin, "Digital Communications", John Wiley
6. B. P. Lathi, "Modern Digital and Analog Communication Systems", Oxford University Press
7. B. Sklar, "Digital Communications", Pearson
8. A. B. Carlson and P. B. Crilly, "Communication Systems", McGraw Hill
9. S. Haykin, "Digital Communication Systems", John Wiley
10. R. Singh & S. Sapre, "Communication Systems: Analog and Digital", Tata McGraw Hill
11. R. N. Mutagi, "Digital Communication", Oxford

Digital Signal Processing
TIU-UEC-T304
L-T-P: 3-1-0   **Credits: 4**

Module-1
Introduction
Limitation of analog signal processing, advantage of digital signal processing, different
type of discrete signal and system, concept of linearity, causality ,stability of the system,
frequency domain representation and Fourier transform.
Module-2
Processing of continuous time signal
Sampling and discrete time processing of continuous time signal,Decimation and
Interpolation.
Module-3
Discrete Fourier transform
DFT and its properties, linear filtering methods based on DFT, Filtering of long data
sequence, Fast Fourier Transform algorithm using decimation in time and decimation in
frequency technique.
Module-4
Filter Design
Design of digital IIR filter using different technique for butterworth and chebyshev filter,
Design of FIR filter: different window technique and optimum approximation.
Module-5
Digital signal processor
Architecture and various features of TMS/ADSP, series of digital signal processor;
Instruction set and few application of TMS 320CXX.

Recommended Textbooks:
1. J. G. Proakis& D. G. Manolakis, "Digital Signal Processing: Principles, Algorithms and
Applications", Pearson
2. S. K. Mitra, "Digital Signal Processing: A Computer Based Approach", McGraw Hill
3. T. J. Cavicchi, "Digital Signal Processing", John Wiley
4. A. V. Oppenheim & R. W. Schafer, "Discrete Time Signal Processing", Prentice Hall
5. L. R. Rabiner& B. Gold, "Theory and Application of Digital Signal Processing", Prentice Hall
6. P. Ramesh Babu, "Digital Signal Processing", Scitech

Computer Networking
TIU-UEC-T306
L-T-P: 3-1-0   **Credits: 3**
Module-1
Introduction to networks and layered architecture. Data communication concepts, transmission
media and topology, multiplexing.
Module-2
Circuit switching and packet switching, data link layer, layer 2 switches and ATM switches,
SONET/SDH.

Module-3
Medium access control. CSMA CD, TDMA, FDMA, CDMA. Network layer and addressing, IP version 4 and 6.
Module-4
Routing algorithms.Transmission layer, TCP and UDP. Congestion control techniques. WAN, ATM. Internetworking.Wireless communications.Network management and security.

Recommended Textbooks:
1. B. A. Forouzan, "Data Communication & Networking", McGraw Hill
2. W. Stallings, "Data and Computer Communications", Pearson
3. A. S. Tanenbaum, "Computer Networks", Pearson

Object Oriented Programming
TIU-UCS-L310
L-T-P: 3-1-0   **Credits: 3**

Introduction to object oriented concepts like abstraction, inheritance, polymorphism, data hiding. Introduction to C++ language features like Dynamic initialization, Classes and objects, Function prototyping, Array of objects, Constructors, Operator overloading, Inheritance, Templates, Streams.

Exception Handling. Introduction to Object Oriented Methodologies, Rational Unified Process, Unified Modeling Language, UML diagrams.

Recommended Textbooks:

1. M. R. Blaha& J. R. Rambaugh, "Object-Oriented Modeling and Design with UML", Pearson
2. E. Balaguruswamy, "Object Oriented Programming with C++", Tata McGraw Hill

Industrial Management
TIU-UMG-T312
L-T-P: 3-1-0   **Credits: 3**

Module-1
Introduction : Concept, Development, application and scope of Industrial Management.
Productivity : Definition, measurement, productivity index, types of production system, Industrial Ownership.
Module-2
Management Function: Principles of Management- Management Tools – time and motion study, work simplification- process charts and flow diagrams, Production Planning, Specification of Production requirements.
Module-3
Inventory control: Inventory, cost, Deterministic models, Introduction to supply chain management.

Module-4
Quality control: Meaning, process control, SQC control charts, single, double and sequential sampling, Introduction to TQM.

Module-5
Environmental Issues: Environmental Pollution – various management techniques to control Environmental pollution – Various control acts for Air, Water, Solid waste and Noise pollution.

Recommended Textbooks:
1. O. P. Khanna, "Industrial Engineering and Management", DhanpatRai
2. T. R. Banga& S. C. Sharma, "Industrial Engineering &Management", Khanna Publications

Digital Communication Lab
TIU-UEC-L302
L-T-P: 0-0-3   **Credits: 2**

List of Experiments:

1. To study of ASK modulation/demodulation.
2. To study of FSK modulation/demodulation.
3. To study of PSK modulation/demodulation.
4. To study of QPSK modulation/demodulation.
5. To study of pulse code modulation.

DSP Lab
TIU-UEC-L304
L-T-P: 0-0-3   **Credits: 2**

List of Experiments:

1. Generate Different Types Of Waveform Using MATLAB
2. Convolution of two user input discrete signals having unequal number of terms.
3. Find out the DFT of any input sequence using Direct MATLAB codes.
4. Find out Poles and Zeros from a given transfer function.

Object Oriented Programming Lab
TIU-UCS-L310
: 0-0-3   **Credits: 2**

List of Experiments:

1. Write a program in java to implement encapsulation using some Getter-Setter method.

2. Write a program in java to evaluate the perimeter of different shapes(triangle, rectangle, circle) using method overloading.
3. Write a program in java to evaluate the area of different shapes(triangle, rectangle, circle) using method overriding.
4. Write a program in java to check whether user given no is either Armstrong no or not.
5. Write a program in java to check whether user given string is either Palindrome or not.
6. Write a program in java to calculate the no's of vowels, consonant, words and sentence in a given user input.
7. Write a program in java to implement multiple thread using join sleep method and is Alive method to suspend and resume those threads.
8.   Write a program in java to implement user defined exception for an user given condition.