



List of New Course(s) Introduced

Department : Information Technology Engineering

Programme Name : B.Tech.

Academic Year : 2016-17

List of New Course(s) Introduced

Sr. No.	Course Code	Name of the Course
01.	IT3TPC03	DATA STRUCTURE AND PROGRAMMING METHODOLOGY
02.	IT3TPC05	DATA COMMUNICATION
03.	IT3LES01	NACA LAB
04.	IT3LPC02	DATA STRUCTURE LAB
05.	IT3LPC03	OBJECT ORIENTED PROGRAMMING LAB
06.	IT4THS01	ENGG. ECONOMICS
07.	IT4TPC02	INTRODUCTION TO INFORMATION SCIENCE
08.	IT4TPC04	COMPUTER NETWORK
09.	IT4LPC02	COMPUTER NETWORK LAB



Minutes of Meetings (MoM) of Board of Studies (BoS)

Academic Year : 2016-17

School : **School of Studies of Engineering and Technology**

Department : **Information Technology Engineering**

Date and Time : **June 27, 2016 - 02:00 PM**

Venue : **Department of Information Technology**

Minutes of Meeting

Board of Studies of Information Technology meeting held on dated 27/06/2016 at 2 PM in the office of the dept. of Information Technology, Institute of Technology, GGV Bilaspur(C.G.). The following members attended the meeting.

1. Mr. Amit Kumar Khaskalam (Chairman)
2. Mr. Abhishek Jain (Member)
3. Dr. Manish Shrivastava (Invited Member, Head – Computer Science Engg.)
4. Dr. Sandeep Singh (Invited Member, Mathematics)


- i. The Committee reviewed the proposed syllabus of B.Tech. 2nd Year.
- ii. The examination scheme and detailed syllabus based on choice based credit system (CBCS) of B.Tech. 2nd year (III Semester & IV Semester) is approved from session 2016-17.
- iii. The syllabus of engineering economics adopted from civil engineering department already approved by BOS of civil engineering dept.
- iv. The syllabus of 3rd year and 4th year will be finalized in next BOS meeting.

The committee discussed and approved the scheme and syllabi. The following courses were revised in the of B. Tech. Second year (IV and V Semesters) :

- ❖ NUMERICAL ANALYSIS & COMPUTER APPLICATIONS (IT3TES01)
- ❖ OBJECT ORIENTED PROGRAMMING WITH C++ AND APPLICATIONS (IT3TPC04)
- ❖ DISCRETE STRUCTURE (IT4TES03)
- ❖ DIGITAL LOGIC AND DESIGN (IT4TPC05)
- ❖ Did Lab (IT4LPC01)


The following new courses were introduced in the of B. Tech. Second year (IV and V Semesters):

- ❖ DATA STRUCTURE AND PROGRAMMING METHODOLOGY (IT3TPC03)
- ❖ DATA COMMUNICATION (IT3TPC05)
- ❖ NACA LAB (IT3LES01)


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- ❖ DATA STRUCTURE LAB (IT3LPC02)
- ❖ OBJECT ORIENTED PROGRAMMING LAB (IT3LPC03)
- ❖ ENGG. ECONOMICS (IT4THS01)
- ❖ INTRODUCTION TO INFORMATION SCIENCE (IT4TPC02)
- ❖ COMPUTER NETWORK (IT4TPC04)
- ❖ COMPUTER NETWORK LAB (IT4LPC02)


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Scheme and Syllabus

SCHEME OF EXAMINATION FOR B. TECH. INFORMATION TECHNOLOGY
(EFFECTIVE FROM SESSION 2016-17 ONWARDS)
DEPARTMENT OF INFORMATION TECHNOLOGY, INSTITUTE OF TECHNOLOGY, GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR

III SEMESTER B.Tech.				Periods /Week			Evaluation Scheme		Grand Total	Total credit
S.No.	Subject Code	Subjects	L	T	P	Internal Assessment (IA)	END SEMESTER EXAMINATION (ESE)			
THEORY										
1	IT3TES01	NUMERICAL ANALYSIS & COMPUTER APPLICATIONS	3	0	0	40	60	100	3	
2	IT3TBS02	MATHEMATICS - III	3	1	0	40	60	100	4	
3	IT3TPC03	DATA STRUCTURE & PROGRAMMING METHODOLOGY	3	1	0	40	60	100	4	
4	IT3TPC04	OBJECT ORIENTED PROGRAMMING WITH C++ AND APPLICATION	3	1	0	40	60	100	4	
5	IT3TPC05	DATA COMMUNICATION	3	0	0	40	60	100	3	
PRACTICAL										
1	IT3LES01	NACA LAB	0	0	3	30	20	50	2	
2	IT3LPC02	DATA STRUCTURE LAB	0	0	3	30	20	50	2	
3	IT3LPC03	OBJECT ORIENTED PROGRAMMING LAB	0	0	3	30	20	50	2	
Total Credits									24	

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SCHEME OF EXAMINATION FOR B. TECH. INFORMATION TECHNOLOGY
(EFFECTIVE FROM SESSION 2016-17 ONWARDS)
DEPARTMENT OF INFORMATION TECHNOLOGY, INSTITUTE OF TECHNOLOGY, GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR

S.No.	Subject Code	Subjects	Periods /Week			Evaluation Scheme		Grand Total	Total credit
			L	T	P	Internal Assessment	ESE		
1	IT4THS01	ENGG. ECONOMICS	3	0	0	40	60	100	3
2	IT4TPC02	INTRODUCTION TO INFORMATION SCIENCE	3	0	0	40	60	100	3
3	IT4TES03	DISCRETE STRUCTURE	3	1	0	40	60	100	4
4	IT4TPC04	COMPUTER NETWORK	3	1	0	40	60	100	4
5	IT4TPC05	DIGITAL LOGIC AND DESIGN	3	1	0	40	60	100	4
PRACTICAL.									
1	IT4LPC01	DLDD LAB	0	0	3	30	20	50	2
2	IT4LPC02	COMPUTER NETWORK LAB	0	0	3	30	20	50	2
3	IT4LPC03	MINI PROJECT	0	0	3	30	20	50	2
								Total Credits	24

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S.No.	Subject Code	Subjects	Periods /Week			Evaluation Scheme		Grand Total	Total credit
			L	T	P	Internal Assessment	ESE		

DATA STRUCTURE & PROGRAMMING METHODOLOGY

UNIT-I

Introduction: Basic Terminology, Definition of Data Structure, Types of Data Structure, Operation on Data Structure, **Arrays:** Array Definition, Representation of Arrays: Row Major Order, and Column Major Order. **Searching and Sorting:** Selection Sort, Insertion Sort, Bubble Sort, Quick Sort, Merge Sort, Binary Search, Linear Search.

UNIT II

Linked lists: Definition, Representation and Implementation of Singly Linked Lists, Traversing and Searching of Linked List, Insertion and deletion to/from Linked Lists, Insertion and deletion Algorithms, Doubly Linked List, Circularly Linked List.

UNIT III

Stacks: Array Representation and Implementation of stack, Operations on Stacks: Push & Pop, Array Representation of Stack, Linked Representation of Stack, Operations Associated with Stacks, Application of stack: Conversion of Infix to Prefix and Postfix Expressions, Evaluation of postfix expression using stack.,

Queue: Array and linked representation of queues, Operations on Queue: Create, Add, Delete, Full and Empty, Circular queues, Deques.

UNIT IV

Trees: Basic Technology , Binary Tree , Binary tree representation , Algebraic Expressions , Complete Binary Tree, Extended Binary Tree, Full Binary Tree, Array and linked Representation of Binary trees, Traversing Binary trees, Threaded Binary trees, Binary search trees (BST), Insertion and deletion in BST, AVL trees, Heap and heap sort.

UNIT V

Graph: Terminology & Representations, Graphs & Multi-graphs, Directed Graphs, Weighted Graph, Sequential Representations of Graphs, Adjacency Matrices, Adjacency List, Path Matrices, Linked Representations of Graphs, Graph Traversal - DFS, BFS, Shortest Path algorithm: Warshal Algorithm and Dijkstra Algorithm, Spanning Trees, Minimum Cost Spanning Trees: Prims and Kruskal algorithm.

References books:

1. Lipschutz, "Data Structures with C" Schaum's Outline Series, TMH.
2. Horowitz and Sahani, "Fundamentals of data Structures", Galgotia Publication Pvt. Ltd.
3. R. Kruse etal, "Data Structures and Program Design in C", Pearson Education Asia.
4. A. M. Tenenbaum, "Data Structures using C & C++", Prentice-Hall of India Pvt. Ltd.
5. K Loudon, "Mastering Algorithms with C", Shroff Publisher & Distributors Pvt. Ltd.
6. Jean Paul Trembley and Paul G. Sorenson, "An Introduction to Data Structures with applications", McGraw Hill.
7. G A V Pai, "Data Structures and Algorithms", TMH.
8. G.S.Baluja, "Data Structures through C", Dhanpat Rai & Co.
9. Yashavant Kanetkar, "Data Structure Through C", BPB Publication.

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			L	T	P	Internal Assessment	ESE		
5	IT3TPC05	DATA COMMUNICATION	3	0	0	40	60	100	3

Data Communication

Unit I

Data and signal-Analog and digital signals, Time and frequency domain, Composite signals, - Bandwidth, bit rate, bit length, Baseband and broadband transmission, Attenuation, distortion, noise, Nyquist bit rate, Shannon capacity.

Unit II

Data communication concepts – Data transmission – Parallel and serial transmission, synchronous, and Asynchronous transmission, Simplex, half duplex and full duplex, unipolar and polar line codes, Non return to zero codes, return to zero codes, bipolar line codes,

Unit III

Telephone Network-Network topology, Multiplexing, Frequency division multiplexing, time division multiplexing and wavelength division multiplexing, pulse code modulation, 1.

Unit IV

Switching techniques- Circuit, packet and hybrid switching, Types of error, single bit error, burst error, Error detection, Vertical redundancy check, Longitudinal redundancy check, cyclic redundancy check, error correction, Integrated services digital network,

Unit V

Transmission media-Guided and unguided media, twisted pair, Unshielded twisted pair and Shielded twisted pair, coaxial cable and fiber optic cable, radio waves, microwaves and infrared transmission RJ-45, Network interface card, rack, cable standard-Category 5,6, and 7, cross connection, straight connection cable coding standards,

Books & References:-

1. "Data communication and networking", Forouzan, TMH 4th edition
2. Data communication and Computer Networks, Prakash C Gupta, PHI Learning
3. "Computer Networks" - Tanenbaum, PHI Learning.
4. "Communication Networks-Fundamental concepts and key Architectures", Leon-Garcia, Widjaja, TMH
5. "Computer Communications & Networking Technologies"-Michael A. Gallo & William M. Hancock - Cengage pearson publications
6. "Network for computer scientists & engineers" – Youlu zheng & shakil akhtar, Oxford pub.

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			L	T	P	Internal Assessment	ESE		
I	IT4THS01	ENGG. ECONOMICS	3	0	0	40	60	100	3

ENGINEERING ECONOMICS

Unit 1: Basic Concepts and Definitions, Methodology of Economics, Demand and Supply – elasticity, Theory of the Firm and Market Structure, Price and output determinations in different types of market

Unit 2: Public Sector Economics – Welfare economics, Central and commercial banks and their functions, Industrial policies, theory of localization, Weber & Sargent Florence theory, investment analysis-NPV, ROI, IRR, Payback period, SWOT analysis.

Unit 3: Monetary and Fiscal Policy; Tools, impact on the economy, Inflation, Business Cycle, Cash Flow-2,3,4 Model

Unit 4: Business Forecasting – Elementary techniques., Cost and Revenue Analysis, Capital Budget, Break Even Analysis.

Unit 5: Indian economy; Urbanization, Unemployment–Poverty, Regional Disparities, Unorganized Sectors- Roll of Plans, Reforms-Post Independent period.

Text/Reference Books:

- 1 Mankiw Gregory N. (2002), Principles of Economics, Thompson Asia
- 2 V. Mote, S. Paul, G. Gupta (2004), Managerial Economics, Tata McGraw Hill
- 3 Misra, S. K. and Puri (2009), Indian Economy, Himalaya
- 4 Pareek Saroj (2003), Textbook of Business Economics, Sunrise Publishers

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			L	T	P	Internal Assessment	ESE		
2	IT4TPC02	INTRODUCTION TO INFORMATION SCIENCE	3	0	0	40	60	100	3

INTRODUCTION TO INFORMATION SCIENCE

UNIT-I

Uncertainty, Information and Entropy Information Measures: Characteristics on information measure; Shannon's concept of information; Shannon's measure of information; Model for source coding theorem; Communication system; Source coding and line/channel coding; channel models, channel mutual information capacity (Bandwidth).

UNIT-II

Channel coding, Theorem for discrete memory less channel, Information capacity theorem: Error detecting and error correcting codes; Types of codes; Block codes; Tree codes; Hamming codes; Description of linear block codes by matrices; Description of linear tree code by matrices; Parity check codes; Parity check polynomials.

UNIT-III

Compression: Lossless and lossy; Huffman codes; Binary Image compression schemes; Runlength Encoding; CCITT group-3 1D compression; CCITT group-3 2D compression; CCITT group-4 2D compression.

UNIT-IV

Video Image Compression: Requirement of full motion video compression; CCITT H 261 video coding algorithm; MPEG compression methodology; MPEG-2 compression; Audio (Speech) compression.

UNIT-V

Cryptography: Encryption; Decryption; Cryptogram (cipher text); Concept of cipher; Cryptanalysis; Keys: Single key (Secret key); Cryptography; two-key (Public key) cryptography; Single key cryptography; Ciphers; Block Cipher code; Stream ciphers; Requirements for secrecy; The data Encryption Standard; Public Key Cryptography; Diffie-Hellmann public key distribution; The Rivest-Shamir Adelman (R-S-A) system for public key cryptography; Digital Signature.

Text Books:

1. Digital Communication by Das, Mullick & Chatterjee, New Age Pub.
2. Digital Communication by Proakis, TMH
3. Digital Image Processing by Gonzales & Woods, Pearson (for Unit – III & IV)
4. Local Area Network by G. Keiser, TMH (for Unit – V)

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			L	T	P	Internal Assessment	ESE		
4	IT4TPC04	COMPUTER NETWORK	3	1	0	40	60	100	4

Computer Network

UNIT I - Introduction: OSI and TCP/IP Reference models, Function of layers, Network Topologies, Categories of Network - LAN, WAN, MAN, Line Configuration, Transmission Modes, Networking Devices.

UNIT II - Data link layer: Design issues, framing, error detection and correction, CRC, Hamming Code Method, Elementary Protocol- stop and wait, Sliding Window, HDLC, Ethernet, CSMA/CD.

UNIT III - Network Layer: Design Issues, Forwarding and Routing, Virtual Circuit and Datagram Networks, shortest path routing – Dijkstra's algorithms, Link State Routing, Distance Vector Routing, Internet Protocol (IP), Hierarchical Routing – RIP – OSPF – BGP.

UNIT IV - Transport Layer: Transport Layer Services, Transmission Control Protocol, TCP header, 3 way Handshake, UDP, UDP header, Difference between TCP and UDP, Reliable Data Transfer – Go Back N and Selective Repeat.

UNIT V - Application Layer: Principles of Network Applications, Encryption, Compression, Cryptography: Substitution and Transposition Ciphers, Data functions: translation, Encryption standards (DES), RSA, Email, World Wide Web, file transfer protocol, VoIP, TFTP.

TEXT BOOKS

1. Data Communications and Networking – Behrouz A. Forouzan. TMH.
2. Computer Networks — Andrew S Tanenbaum, Pearson Education/PHI.
3. Data and Computer Communication by William Stalling (Pearson Education).

REFERENCE BOOKS

1. An Engineering Approach to Computer Networks-S.Keshav, 2nd Edition, Pearson Education.
2. Understanding communications and Networks, 3rd Edition, W.A. Shay, Thomson.
3. Computer Networking by Ed Tittel (Schaum's series) (TMH).
4. Comer, "Computer Networks and Internets with Internet Applications", Pearson Education.

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