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List of New Course(s) Introduced

Department	**: *Information Technology Engineering***
Programme Name	**: *B.Tech.***

Academic Year : 2018-19

List of New Course(s) Introduced

Sr. No.	Course Code	Name of the Course
01.	IT7TPC01	INTERNETWORKING AND NETWORK PROGRAMMING
02.	IT7TPC02	WIRELESS SENSOR NETWORK
03.	IT7LPC01	INTERNETWORKING AND NETWORK PROGRAMMING LAB
04.	IT7LPC03	PROJECT
05.	IT8TPC01	CYBER SECURITY
06.	IT8TPC02	SOFT COMPUTING
07.	IT8LPC01	CYBER SECURITY LAB
08.	IT8LPC02	SOFT COMPUTING LAB
09.	IT8LPC04	SEMINAR

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

Academic Year : 2018-19	
School :	*School of Studies of Engineering and Technology*
Department :	*Information Technology Engineering*
Date and Time :	*May 25, 2018 – 02.00 PM*
Venue :	*Department of Information Technology*

Minutes of Meeting

Subject: Regarding Board of Studies Meeting of Department of Information Technology

As per the Letter No. 156/acad./bos/it engg/2018 bilaspur 24/05/18 to finalize the Scheme and Syllabus of CBCS B.Tech. IT (4th) Year. A Meeting of Board of Studies has held on 24/05/2018 at 02.00 pm in the Department of Information Technology , SOS (E&T), Guru Ghasidas VishwavidyalayaBilaspur (C.G.). Following BoS members and faculty members attended the meeting:

1. Mr. Santosh Soni (Head I/c , Chairman BoS)
2. Dr. O.P.Vyas (Subject Expert & External Member , BoS)
3. Mr. Ashish Shrivastava (Industry External Member, BoS)
4. Mr. Agnivesh Pandey (Faculty Member)

Following points has been discussed in the BoS meeting:

1. The Scheme and Syllabus of B.Tech. IT (4th) Year CBCS has been discussed and approved.

The committee discussed and approved the scheme and syllabi. The following courses were revised in the of B. Tech. Final year (VII and VIII Semesters) :

❖ MOBILE COMPUTING (IT7TPE22)
❖ COMPILER DESIGN (IT7TPE11)
❖ ARTIFICIAL INTELLIGENCE & EXPERT SYSTEMS (IT7TOE11)
❖ OPEN SOURCE SYSTEM & PROGRAMMING (IT8TPE11)
❖ INTRODUCTION TO .NET TECHNOLOGY (IT8TPE21)

The following new courses were introduced in the of B. Tech. Final year (VII and VIII Semesters):

❖ INTERNETWORKING AND NETWORK PROGRAMMING (IT7TPC01)
❖ WIRELESS SENSOR NETWORK (IT7TPC02)
❖ INTERNETWORKING AND NETWORK PROGRAMMING LAB (IT7LPC01)
❖ PROJECT (IT7LPC03)
❖ CYBER SECURITY (IT8TPC01)
❖ SOFT COMPUTING (IT8TPC02)
❖ CYBER SECURITY LAB (IT8LPC01)
❖ SOFT COMPUTING LAB (IT8LPC02)
❖ SEMINAR (IT8LPC04)

HEAD
HEAD
Department of Information Technology
SoS, Engg. & Technology
Guru Ghasidas Vishwavidyalaya
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Scheme and Syllabus

SCHEME FOR EXAMINATION									
B.TECH (FOUR YEAR) DEGREE COURSE									
FOURTH YEAR, INFORMATION TECHNOLOGY									
SEMESTER VII									
EFFECTIVE FROM SESSION 2018-19									
SL. NO.	SUBJECT CODE	SUBJECTS	PERIODS/WEEK			EVALUATION SCHEME			CREDITS
			L	T	P	IA	ESE	TOTAL	
THEORY									
1	IT7TPC01	INTERNETWORKING AND NETWORK PROGRAMMING	3	0	0	40	60	100	3
2	IT7TPC02	WIRELESS SENSOR NETWORK	3	0	0	40	60	100	3
3		PROFESSIONAL ELECTIVE-5	3	1	0	40	60	100	4
4		PROFESSIONAL ELECTIVE-6	3	1	0	40	60	100	4
5		OPEN ELECTIVE- 3	3	0	0	40	60	100	3
PRACTICAL									
1	IT7LPC01	INTERNETWORKING AND NETWORK PROGRAMMING LAB	0	0	3	30	20	50	2
2	IT7LPC02	WIRELESS SENSOR NETWORK LAB	0	0	3	30	20	50	2
3	IT7LPC03	PROJECT	0	0	6	60	40	100	4
4	IT7LPC04	INTERNSHIP	0	0	0	30	20	50	2
		TOTAL						750	27
IA – INTERNAL ASSESSMENT ESE – END SEMESTER EXAM. L- LECTURE T-TUTORIAL P-PRACTICAL									

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SCHEME FOR EXAMINATION									
B.TECH (FOUR YEAR) DEGREE COURSE									
FOURTH YEAR, INFORMATION TECHNOLOGY									
SEMESTER VIII									
EFFECTIVE FROM SESSION 2018-19									
SL. NO.	SUBJECT CODE	SUBJECTS	PERIODS/WEEK			EVALUATION SCHEME			CREDITS
			L	T	P	IA	ESE	TOTAL	
THEORY									
1	IT8TPC01	CYBER SECURITY	3	0	0	40	60	100	3
2	IT8TPC02	SOFT COMPUTING	3	0	0	40	60	100	4
3		PROFESSIONAL ELECTIVE-7	3	1	0	40	60	100	3
4		PROFESSIONAL ELECTIVE-8	3	1	0	40	60	100	4
5		OPEN ELECTIVE- 4	3	0	0	40	60	100	3
PRACTICAL									
1	IT8LPC01	CYBER SECURITY LAB	0	0	3	30	20	50	2
2	IT8LPC02	SOFT COMPUTING LAB	0	0	3	30	20	50	2
3	IT8LPC03	PROJECT	0	0	6	60	40	100	4
4	IT8LPC04	SEMINAR	0	0	3	30	20	50	2
		TOTAL						750	27
IA – INTERNAL ASSESSMENT ESE – END SEMESTER EXAM. L- LECTURE T-TUTORIAL P-PRACTICAL									

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SUB CODE	L	T	P	DURATION/WEEK	IA	ESE	CREDITS
IT7TPC01	3	0	0	3 hours	40	60	3

INTERNETWORKING AND NETWORK PROGRAMMING
UNIT I

Networking & TCP/IP: Protocols, Network architecture, IPv4 & IPv6 address structures, Subnetting and IP Addressing, Transport layer: TCP / UDP Ports, Sockets.

UNIT II

Internetworking: Routing and Switching, basic switching concepts and the operation of Cisco Switches and Router, STP, VLAN, PVSTP, IP Routing Technologies: Cisco IOS, OSPF, EIGRP, DHCP, ACL, NAT, SNMP.

UNIT III

Socket Programming: Creating sockets, Posix data type, Socket addresses, Assigning address to a socket, Programming Applications: Time & date routines, Chat, Email, Web server working method & programming.

UNIT IV

Berkeley Sockets: Overview, socket address structures, byte manipulation & address conversion functions, elementary socket system calls – socket, connect, bind, listen, accept, fork, exec, close, I/O asynchronous & multiplexing models.

UNIT V

APIs & Winsock Programming, ASP, Java network programming, RMI, JSP, CORBA, HTTP server, FTP server, CGI programming.

List of Books:
1. Behrouz A. Forouzan: Data Communications And Networking, TMH
2. Todd Lammle: CCNA Routing and Switching Study Guide, SYBEX
3. Steven.W.R: UNIX Network Programming, PHI (VOL I& II)
4. Window Socket Programming by Bobb Quinn and Dave Schutes
5. Elliotte Rusty Harold: Java Network Programming, O'Reilly

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SUB CODE	L	T	P	DURATION/WEEK	IA	ESE	CREDITS
IT7TPC02	3	0	0	3 hours	40	60	3

WIRELESS SENSOR NETWORK

UNIT I – FUNDAMENTALS OF SENSOR NETWORKS

Introduction to computer and wireless sensor networks , Motivation for a network of Wireless Sensor nodes- Sensing and sensors-challenges and constraints - node architecture-sensing subsystem, processor subsystem-communication interfaces- prototypes, Application of Wireless sensors

UNITII- COMMUNICATION CHARACTERISTICS AND DEPLOYMENT MECHANISMS
Wireless Transmission Technology and systems-Radio Technology Primer-Available Wireless Technologies - Hardware- Telosb, Micaz motes- Time Synchronization-Clock and the Synchronization Problem - Basics of time synchronization-Time synchronization protocols - Localization- Ranging Techniques- Range based Localization-Range Free Localization- Event driven Localization

UNIT III- MAC LAYER
Overview-Wireless Mac Protocols-Characteristics of MAC protocols in Sensor networks – Contention free MAC Protocols- characteristics- Traffic Adaptive Medium Access-Y-MAC, Low energy Adaptive Clustering - Contention based MAC Protocols- Power Aware Multi-Access with signalling

UNIT IV- ROUTING IN WIRELESS SENSOR NETWORKS

Design Issues in WSN routing- Data Dissemination and Gathering-Routing Challenges in WSN - Flooding-Flat Based Routing – SAR, Directed Diffusion, Hierarchical Routing- LEACH, PEGASIS - Query Based Routing- Negotiation Based Routing- Geographical Based Routing-Transport layer- Transport protocol Design issues- Performance of Transport Control Protocols.

UNIT V - MIDDLEWARE AND SECURITY ISSUES
WSN middleware principles-Middleware architecture-Existing middleware - operating systems for wireless sensor networks-performance and traffic management - Fundamentals of network security-challenges and attacks - Protocols and mechanisms for security.

REFERENCES

1. Waltenegus Dargie, Christian Poellabauer , "Fundamentals of Wireless Sensor Networks, Theory and Practice", Wiley Series on wireless Communication and Mobile Computing, 2011
2. Kazem Sohraby, Daniel manoli , "Wireless Sensor networks- Technology, Protocols and Applications", Wiley InterScience Publications 2010.
3. Bhaskar Krishnamachari , " Networking Wireless Sensors", Cambridge University Press, 2005
4. C.S Raghavendra, Krishna M.Sivalingam, Taiebznati , "Wireless Sensor Networks", Springer Science 2004.

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SUB CODE	L	T	P	DURATION/WEEK	IA	ESE	CREDITS
IT8TPC01	3	0	0	3 hours	40	60	3

CYBER SECURITY

UNIT I
A Model for Network Security Services, Mechanisms, and Attacks, Viruses & Worms, The OSI Security Architecture, symmetric cipher model, substitution techniques Transposition techniques, Steganography.

UNIT II
Block ciphers and the data encryption standard , simplified DES , Block cipher principles , The data Encryption Standard , Differential and Linear Cryptanalysis ,Block Cipher Design principles , The AES cipher , Triple DES , blowfish , RC5, Rc4 Stream Cipher

UNIT III
principles of public –Key Cryptosystems , public –Key cryptosystems , Requirements for public –Key Cryptosystems, The RSA Algorithm , Key management , key Distribution ,Hash Functions SHA, MD5. Diffie-Hellman Key Exchange Algorithm

UNIT IV
WEB & IP Security: Web Security Threats, SSL Architecture, SSL Record Protocol, Alert Protocol , Handshake Protocol , Transport Layer Security , Secure Electronic Transaction , IP Security

UNIT V
Intruders : Intrusion Techniques , Firewall Design principles , Block Chain Technology, BitCoin, Types of Firewalls .

List of Books:
1. Cryptography and Network Security, Principles and Practice Third edition , William Stallings .
2. Atul Kahate, " Cryptography and Network Security," TMH
3. Introduction to network security, Krawetz, Cengage

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SUB CODE	L	T	P	DURATION/WEEK	IA	ESE	CREDITS
IT8TPC02	3	1	0	4 hours	40	60	4

SOFT COMPUTING

Unit I: Introduction to Neural Network:
Concept, biological neural network, evolution of artificial neural network, McCulloch-Pitts neuron models, Learning (Supervise & Unsupervised) and activation function ,Models of ANNFeed forward network and feedback network, Learning Rules- Hebbian, Delta, Perceptron Learningand Windrow-Hoff,winnertakeall.

Unit II: Supervised Learning:
Perceptron learning,- Single layer/multilayer, linear Separability, Adaline, Madaline, Back propagation network, RBFN. Application of Neural network in forecasting, data compression and image compression.

Unit III: Unsupervised learning:
Kohonen SOM (Theory, Architecture, Flow Chart, Training Algorithm)Counter Propagation (Theory , Full Counter Propagation NET and Forward only counter propagation net),ART (Theory, ART1, ART2). Application of Neural networks in pattern and face recognition, intrusion detection,roboticvision.

Unit IV: Fuzzy Set:
Basic Definition and Terminology, Set-theoretic Operations, Member Function ,Formulation and Parameterization, Fuzzy rules and fuzzy Reasoning, Extension Principal and Fuzzy Relations, Fuzzy if-then Rules, Fuzzy Inference Systems. Hybrid system including neuro fuzzy hybrid, neuro genetic hybrid and fuzzy genetic hybrid, fuzzy logic controlled GA. Application of Fuzzy logic in solving engineering problems.

Unit V: Genetic Algorithm:
Introduction to GA, Simple Genetic Algorithm, terminology and operators of GA (individual, gene, fitness, population, data structure, encoding, selection, crossover, mutation ,convergence criteria). Reasons for working of GA and Schema theorem, GA optimization problem s including JSPP (Job shop scheduling problem), TSP (Travelling salesman problem), Network design routing ,timetabling problem.

Text Book
1. S.N. Shivnandam, "Principle of soft computing", Wiley.
2. S. Rajshekaran and G.A.V. Pai, "Neural Network , Fuzzy logic And Genetic Algorithm", PHI.

References Book: -
1. Jack M. Zurada, "Introduction to Artificial Neural Network System" JAico Publication.
2. Simon Haykins, "Neural Network- A Comprehensive Foudation"
3. Timothy J.Ross, "Fuzzy logic with Engineering Applications", McGraw-Hills 1