

Swami Rama Himalayan University

Office of the Registrar

SRHU/Reg/OO/2023-144

Date: 22nd July, 2023

OFFICE ORDER

I am directed to inform that the Academic Council in its 29th Meeting under Agenda Item Nos. 29/13 to 29/16 has approved the recommendations made by the **Board of Studies** for the following programmes under Himalayan School of Science & Technology, as enclosed herewith, for implementation:

1. B.Tech. (Computer Science & Engineering) programme, effective from admission batch 2023.
2. B.Tech. (Hons.) Computer Science & Engineering programme with specialization in Artificial Intelligence & Machine Learning, effective for admission batch 2022.
3. B.Tech. (Hons.) Computer Science & Engineering programme with specialization in Data Science & Machine Learning, effective for admission batch 2022.
4. B.Tech. (Hons.) Computer Science & Engineering programme with specialization in Artificial Intelligence & Machine Learning, effective from admission batch 2023.
5. B.Tech. (Hons.) Computer Science & Engineering programme with specialization in Data Science & Machine Learning, effective from admission batch 2023.
6. B.Tech. (Hons.) Computer Science & Engineering programme with specialization in Cyber Security, effective from admission batch 2023.
7. Bachelor of Computer Applications (BCA) programme, effective from admission batch 2023.

By Order,


22/7/23
Registrar

Copy to: Hon'ble Chancellor
Hon'ble Vice Chancellor
Director General (Academic Development)
Controller of Examinations
Principal, Himalayan School of Science & Technology

} for kind information please

Encls.: As above.

BOARD OF STUDIES

BACHELOR OF COMPUTER APPLICATIONS (BCA)

May, 2023

(Effective from Academic Year 2023-24)



**Department of Computer Science and Engineering
Himalayan School of Science & Technology
SWAMI RAMA HIMALAYAN UNIVERSITY
Swami Ram Nagar, Jolly Grant, Doiwala
Dehradun-248016**


Registrar
Swami Rama Himalayan University

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Swami Rama Himalayan University

Swami Rama Himalayan University
Office of the Registrar

SRHU/Reg/OO/2023-91

Date: 5th May, 2023

OFFICE ORDER

In accordance with duly approved Statute 5.07 of the University, the Hon'ble Vice Chancellor has constituted the Board of Studies for B.Tech. (Computer Science & Engineering), B.Tech. (Hons.) Computer Science & Engineering with specializations (AI&ML, DS&ML, Cyber Security) and Bachelor of Computer Applications (BCA) programmes under Himalayan School of Science & Technology, as under:

Dr. R.C. Ramola, Professor & Principal - Himalayan School of Science & Technology		Chairperson
As per the provisions of Statute 5.07(c) of the University, Associate Professor nominated by the Vice Chancellor	Dr. Mukesh Bijalwan, Associate Professor, Himalayan School of Science & Technology	Member
As per the provisions of Statute 5.07(d) of the University, 02 (Two) external subject experts nominated by the Vice Chancellor	Dr. Durga Toshniwal, Professor, IIT Roorkee	Member
	Dr. Manoj Misra, Professor, IIT Roorkee	Member
Special Invitee(s)	Dr. Deepak Srivastava, Asstt. Professor, Himalayan School of Science & Technology Mr. Gaurav Sharma, Asstt. Professor, Himalayan School of Science & Technology	

By Order,


5/5/23
Registrar

Copy to: Hon'ble Chancellor } for kind information please
Hon'ble Vice Chancellor }
Chairperson, Board of Studies
All above concerned


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Swami Rama Himalayan University

**Swami Rama Himalayan University
Office of the Registrar**

SRHU/Reg/Int/2023-223

Date: 5th May, 2023


Meeting Notice

The Meeting of the **Board of Studies** for B.Tech. (Computer Science & Engineering), B.Tech. (Hons.) Computer Science & Engineering with specializations (AI&ML, DS&ML, Cyber Security) and Bachelor of Computer Applications (BCA) programmes under Himalayan School of Science & Technology (HSST), will be held on **13th May 2023 (Saturday) at 11:30 AM**.

The 'Agenda' of the meeting shall be as follows:

1. To recommend, upon reference to it by the faculty, the courses of study, curriculum and methods of assessment in the subject or group of subjects within its purview.
2. To recommend programme objective and course outcome.
3. To recommend books, including text-books, supplementary reading, reference books and other study material for such courses of study.
4. To advise the faculty or faculties concerned regarding improvements in the courses of study.
5. To recommend organization of orientation and refresher courses in the subject.

All concerned members of the said 'Board of Studies' are requested to please make it convenient to attend the meeting.


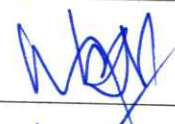



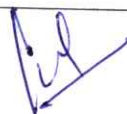

5/5/23
Dr. Susheela Sharma
Registrar

Copy to: Hon'ble Chancellor }
Hon'ble Vice Chancellor } for kind information please
Principal, HSST
Chairperson, Board of Studies
All concerned members of the Board of Studies


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Board of Studies (Attendance)

Board of Studies of Bachelor of Computer Applications (BCA) was conducted on 13th May, 2023 (Saturday) in the online mode.

S. No.	Name	Signature
1	Dr. Ramesh Chand Ramola Principal, HSST (Chairperson)	
2	Dr. Mukesh Bijalwan Associate Professor HSST (Member)	
3	Dr. Durga Toshniwal Professor, Deptt. of Computer Science & Engineering IIT-Roorkee (Member)	
4	Dr. Manoj Misra Professor, Deptt. of Computer Science & Engineering IIT-Roorkee (Member)	
5	Dr. Deepak Srivastava Asstt. Professor HSST (Special Invitee)	
6	Mr. Gaurav Sharma Asstt. Professor HSST (Special Invitee)	

Minutes of the Meeting

In pursuance to the notification SRHU/Reg./Int./2023-223 dated 5th May, 2023 the meeting of Board of Studies for Bachelor of Computer Applications (BCA) was held in the HSST on 13th May, 2023 at 11:30 am in the presence of following members in the online mode.

1. Dr. Ramesh Chand Ramola: Chairperson
2. Dr. Mukesh Bijalwan: Member
3. Dr. Durga Toshniwal: Member
4. Dr. Manoj Misra: Member
5. Dr. Deepak Srivastava: Special Invitee
6. Mr. Gaurav Sharma: Special Invitee

In the meeting, curriculum, methods of assessment in the subject, programme objective, course outcome, books, including text-books and reference books were discussed.



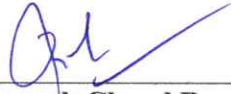
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Suggestions by expert members:

1. Number of seminars should be reduced from four to two.
2. Design Thinking course should be moved from lower semester to higher semester.
3. Contact hours and credits of 3rd semester should be reduced.
4. Design and Analysis of Algorithms course should be shifted from higher to lower semester.

Following suggestions from the expert members are incorporated:

1. Number of seminars has been reduced from four to two.
2. Design Thinking course has been shifted from 2nd Semester to 3rd Semester.
3. Contact hours and credits of 3rd Semester have been reduced.
4. Design and Analysis of Algorithm course has been shifted from 4th Semester to 3rd Semester.



Dr. Ramesh Chand Ramola
Chairperson



Dr. Mukesh Bijalwan
Member



Dr. Durga Toshniwal
Member



Dr. Manoj Misra
Member



Dr. Deepak Srivastava
Special Invitee



Mr. Gaurav Sharma
Special Invitee



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Programme Educational Objectives (PEOs)

The graduate will

PEO1	Employed in computer-technology related positions or technically competent to pursue higher studies.
PEO2	Utilize modern and advanced technological tools for performing problem solving, analysis and synthesis by identifying various computer technical solutions.
PEO3	Actively involved in social and professional service at local, national, and global levels.


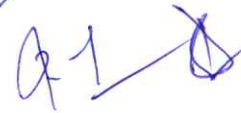


Programme Outcomes (POs)

At the end of the Programme, graduating students/graduates will be able to

PO1	Domain Expertise: Apply knowledge of computing and mathematics appropriate to the discipline.
PO2	Problem analysis: Analyse a problem, and identify and define the computing requirements appropriate to its solution
PO3	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO4	Modern Tool Usage: Use current techniques, skills, and tools necessary for computing practices.
PO5	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO6	Professional ethics: Understand professional ethics and Cyber regulations and develop the youth with social commitments.
PO7	Communication Efficacy: Communicate effectively with computing society in both verbal and written form
PO8	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes (PSOs)

PSO1	Understand the basic concepts of programming languages, databases, digital fundamentals, Computer networking and web applications.
PSO2	Understand standard software engineering and project management concepts in software project development using programming environment for computer technology oriented business applications.

M-2-Mis- Q1  


Study & Evaluation Scheme


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SWAMI RAMA HIMALAYAN UNIVERSITY
Himalayan School of Science & Technology

Study and Evaluation Scheme: BCA Programme (Effective from Academic Year 2023-24)

S. No.	COURSE CODE		CATEGORY	COURSE TITLE	EVALUATION SCHEME										CREDITS						
					PERIODS					THEORY					PRACTICAL/PRACTICES					CONTRACT HOURS (L+T+P)	Theory
	L	T			P	SE-I	SE-II	T/A	ESE	TOTAL	INTERNAL	ESE	TOTAL	THEORY	PRACTICES	GRAND TOTAL					
																	1	2	3	4	5
1	BC111T	BC111P	CC	Computer Fundamentals and Information Technology	3	0	2	20	20	10	100	150	20	30	50	200	5	3	1	4	
2	BC112T	BC112P	CC	Programming Concepts using C Language	3	1	2	20	20	10	100	150	20	30	50	200	6	4	1	5	
3	HS111T	HS111P	AECC	English	3	0	2	20	20	10	100	150	0	0	0	150	3	0	0	0	
4	HS112T		AECC	Environmental Studies	3	0	0	20	20	10	100	150	0	0	0	150	3	0	0	0	
5	BC113T		FC	Foundation Course in Mathematics-I	3	1	0	20	20	10	100	150	0	0	0	150	4	4	0	4	
6	BC114T		AECC	Fundamentals of Accounting and Finance	3	1	0	20	20	10	100	150	0	0	0	150	4	4	0	4	
TOTAL					18	3	6	120	120	60	600	900	60	90	150	1050	27	15	2	17	




1 YEAR SEM-II

S. No.	COURSE CODE		CATEGORY	COURSE TITLE	EVALUATION SCHEME										CREDITS						
					PERIODS					THEORY					PRACTICAL/PRACTICES					CONTRACT HOURS (L+T+P)	Theory
	L	T			P	SE-I	SE-II	T/A	ESE	TOTAL	INTERNAL	ESE	TOTAL	THEORY	PRACTICES	GRAND TOTAL					
																	1	2	3	4	5
1	BC121T	BC121P	CC	Object Oriented Programming and Design using C++	3	0	2	20	20	10	100	150	20	30	50	200	5	3	1	4	
2	BC122T	BC122P	CC	Data Structures	3	1	2	20	20	10	100	150	20	30	50	200	6	4	1	5	
3	BC123T		FC	Foundation Course in Mathematics -II	3	1	0	20	20	10	100	150	0	0	0	150	4	4	0	4	
4	BC124T		CC	Computer Organization and Architecture	3	1	0	20	20	10	100	150	0	0	0	150	4	4	0	4	
5	BC125T		CC	Data Communication and Computer Networks	3	0	0	20	20	10	100	150	0	0	0	150	3	3	0	3	
6	HS121T		AU	Human Values & Professional Ethics	3	0	0	20	20	10	50	100	0	0	0	100	3	0	0	0	
7			PP	Science of Joyful Living/ Yoga and Health/Sports & Activities	0	0	2	0	0	0	0	0	0	0	0	0	2	0	0	0	
TOTAL					18	3	6	120	120	60	550	850	40	60	100	950	27	18	2	20	

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2 YEAR SEM -III																			
S. No.	COURSE CODE	CATE GORY	COURSE TITLE	EVALUATION SCHEME										CON TACT HOURS (L+T+P)		CREDITS			
				PERIODS			THEORY			PRACTICAL/PRACTICES				GRAND TOTAL	Theory	Practical/Practices	Total		
				L	T	P	SE-I	SE-II	T A	ESE	TOTAL	INTERNAL	EXTERNAL					TO TA L	
1	BC231T	CC	Programming in JAVA	3	0	2	20	20	10	100	150	20	30	50	200	5	3	1	4
2	BC232T	CC	Database Management System	3	1	2	20	20	10	100	150	20	30	50	200	6	4	1	5
3	BC233T	CC	Design Thinking	3	0	0	20	20	10	100	150	0	0	0	150	3	3	0	3
4	BC234T	CC	Design and Analysis of Algorithms	3	1	2	20	20	10	100	150	20	30	50	200	6	4	1	5
5	BC236T	AECC	Discrete Mathematics	3	1	0	20	20	10	100	150	0	0	0	150	4	4	0	4
6	SE231P	SEC	Soft Skills-I*	0	0	2	0	0	0	0	0	0	0	0	0	2	0	0	0
7	PP231P	PP	Seminar-I	0	0	2				Presentation and Report				50	2	0	1	1	
TOTAL				15	3	10	100	100	50	500	750	60	90	150	950	26	18	4	22

2 YEAR SEM-IV																			
S. No.	COURSE CODE	CATE GORY	COURSE TITLE	EVALUATION SCHEME										CON TACT HOURS (L+T+P)		CREDITS			
				PERIODS			THEORY			PRACTICAL/PRACTICES				GRAND TOTAL	Theory	Practical/Practices	Total		
				L	T	P	SE-I	SE-II	T A	ESE	TOTAL	INTERNAL	EXTERNAL					TO TA L	
1	BC235T	CC	Software Engineering	3	1	0	20	20	10	100	150	0	0	0	150	4	4	0	4
2	BC242T	CC	Web Technology	3	0	2	20	20	10	100	150	20	30	50	200	5	3	1	4
3	BC243T	CC	Python Programming	3	0	2	20	20	10	100	150	20	30	50	200	5	3	1	4
4	BC244T	CC	Operating Systems	3	1	0	20	20	10	100	150	0	0	0	150	4	4	0	4
5	BC245T	AECC	Optimization Techniques	3	1	0	20	20	10	100	150	0	0	0	150	4	4	0	4
6	SE241P	SEC	Soft Skills-II*	0	0	2	0	0	0	0	0	0	0	0	0	2	0	0	0
7	PP241P	PP	Seminar-II	0	0	2				Presentation and Report				50	2	0	1	1	
TOTAL				15	3	8	100	100	50	500	750	40	60	100	900	26	18	3	21

Mishra






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3 YEAR SEM V

S No.	COURSE CODE		CATEGORY	COURSE TITLE	PERIODS		EVALUATION SCHEME							GRAND TOTAL	CREDITS						
	Theory	Practical/Practices			L	T	P	THEORY			PRACTICAL/PRACTICES				CONT ACT HOURS (L+T+P)	Theory	Practical/Practices	Total			
								SE-I	SE-II	T A E	TOTAL	INTERNAL	EXTERNAL						TOTAL		
1	BC351T	BC351P	CC	Unix/Linux & Shell Programming	3	0	2	20	20	10	100	150	20	30	50	200	5	3	1	4	
2	BC352T	BC352P	CC	(Dot) Net Framework	3	0	2	20	20	10	100	150	20	30	50	200	5	3	1	4	
3	BC353T	BC353P	CC	Cloud Computing and Virtualization Techniques	3	0	2	20	20	10	100	150	20	30	50	200	5	3	1	4	
4	BC354T		CC	Data Warehousing & Data Mining	3	1	0	20	20	10	100	150	0	0	0	150	4	4	0	4	
5	CE35#		DSEC	Core Elective-I	3	0	0	20	20	10	100	150	0	0	0	150	3	3	0	3	
6		PP351P	PP	Project Work Phase-I	0	0	6	Synopsis, Literature, Survey & Presentation			50	External Assessment		100				6	0	0	3
TOTAL					15	1	12	100	100	50	500	800	60	90	250	1050	28	16	6	22	

3 YEAR SEM-VI

S No.	COURSE CODE		CATEGORY	COURSE TITLE	PERIODS		EVALUATION SCHEME							GRAND TOTAL	CREDITS						
	Theory	Practical/Practices			L	T	P	THEORY			PRACTICAL/PRACTICES				CONT ACT HOURS (L+T+P)	Theory	Practical/Practices	Total			
								SE-I	SE-II	T A E	TOTAL	INTERNAL	EXTERNAL						TOTAL		
1	BC361T		CC	Introduction to Cyber Security and Cyber Laws	3	0	0	20	20	10	100	150	0	0	0	150	3	3	0	3	
2	BC362T		CC	Data Visualization Techniques	3	0	2	20	20	10	100	150	20	30	50	200	5	3	1	4	
3	CE36#		DSEC	Core Elective-II	3	0	0	20	20	10	100	150	0	0	0	150	3	3	0	3	
4	CE36#		DSEC	Core Elective-III	3	0	0	20	20	10	100	150	0	0	0	150	3	3	0	3	
5	OE36#		GEC	Open Elective	3	0	0	20	20	10	100	150	0	0	0	150	3	3	0	3	
6		PP361P	PP	Project Work Phase-II	0	0	12	Report, Analysis, Implementation/ Simulation & Presentation			100	External Assessment		100				2	0	0	6
TOTAL					15	0	14	100	100	50	500	850	20	30	150	1000	29	15	7	22	

*The Soft Skills are for enhancing the skills for placements. It will not appear in grade card of the students.

(Handwritten signatures and initials in blue ink)


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 Swami Rama Himalayan University

SUMMARY OF CREDITS							
Semester	I	II	III	IV	V	VI	Total Credits
Credits	17	21	22	21	22	22	124
Total credits to be earned for the award of degree : 124							

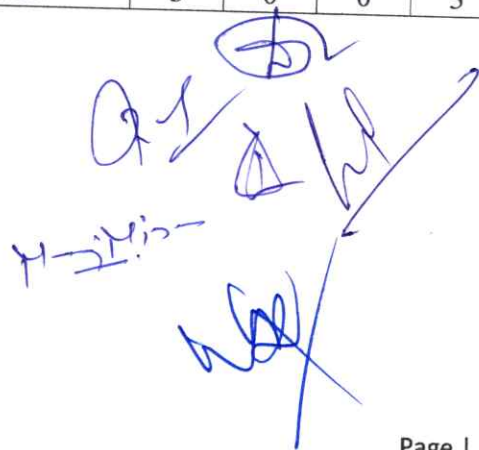
ELECTIVE COURSES

ELECTIVE I						
S. No.	Course Code	Course Title	L	T	P	C
1	CE351T	Artificial Intelligence and Robotics	3	0	0	3
2	CE352T	Multimedia and Animation	3	0	0	3
3	CE353T	Social Media & Analysis	3	0	0	3
4	CE354T	Block chain Technology and its Applications	3	0	0	3

ELECTIVE II						
S. No.	Course Code	Course Title	L	T	P	C
1	CE361T	Introduction to Internet of Things	3	0	0	3
2	CE362T	Wireless Communication	3	0	0	3
3	CE363T	Mobile Computing	3	0	0	3

ELECTIVE III						
S. No.	Course Code	Course Title	L	T	P	C
1	CE364T	Big data Analysis	3	0	0	3
2	CE365T	Quantum Computing	3	0	0	3
3	CE366T	Cryptography & Network Security	3	0	0	3




Open Elective						
S. No	Course Code	Course Title	L	T	P	C
1	OE361T	Entrepreneurship Development	3	0	0	3
2	OE362T	Principals of Management	3	0	0	3
3	OE363T	Disaster Management	3	0	0	3





The Generic Elective courses may be conducted online/ offline in credit transfer mode either using UGC-MEeIT (Ministry of Electronics & Information Technology) platform or MOOCS through Study Webs of Active Learning for Young Aspiring Minds (SWAYAM) Portal or as prescribed by the Department, pursuant to relevant staff, resources and current topic of interest considerations in the related domains.

Categories with their Credit Percentage				
S. No.	Notations	Category	Credits	%age
1.	AECC	Ability Enhancement Compulsory Course	12	09.6
2.	CC	Core Course	81	65.32
3.	PP	Professional Practices	11	8.8
4.	DSEC	Discipline Specific Elective Course	9	7.2
5.	GEC	Generic Elective Course	3	2.4
6.	AU	Audit Course	0	0
7.	SEC	Skill Enhancement Course	0	0
8.	FC	Foundation Courses	8	6.4
Total			124	100

M. S. Misra






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SEMESTER I



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Course Code:	Course Title:	L	T	P	C
BC111T /BC111P	Computer Fundamentals and Information Technology	3	0	2	4
Course Objectives:	1. Skill enhancement related to IT basics, computer applications, programming, interactive medias, Internet basics etc. 2. Have a basic understanding of personal computers and their operations 3. It builds the foundation of the computer application				
Course Outcomes:	After the completion of this course, the students will be able to	Cog. Le vel	Knwl. Cat.		
	1. Understand a computer system that has hardware and software components, which controls and makes them useful.	R,U	F,C,P		
	2. Comprehend the operating system as the interface to the computer system	R,U,A	F,C,P		
	3. Understand the operating system as the interface to the computer system. Outline various application of IT Differentiate between assembly and high-level language	R,U	F,C,P		
	4. Identify various web browser, Use the Internet to send mail and surf the World Wide Web	R,A,A, AZ	F,C,P		
	5. Evaluate ethical concerns involved in the use of technology and also identify issues related to information security.	R,U,A, AZ,E	F,C,P		
Unit I	Lecture-9				
Fundamentals of Computer: Historical evolution of computers, Generations of computers, Classification of computers - based on size, processor, Usefulness of Computers. Applications of computers, Block Diagram along its components and characteristics, Interaction between the CPU, Memory Input/output devices, function of CPU and major functional parts of CPU. State the relevance of speed and word length for CPU Performance, Recognize the current family of CPUs used in Computers, Types of Memory- RAM ROM, Monitor, Mouse, Keyboard, Disk, joysticks, Storage Devices, floppy disk, CD, DVD, Pen drive, trackballs, Printers Types of printers, Scanner, Modem, Video, Sound cards, Speakers					
Unit II	Lecture-9				
Data Representation: Definition of Information, difference between data and information, importance of Binary Number System, various number systems, Conversion from Decimal to Binary, Conversion from Binary to Decimal, binary number into hexadecimal number, hexadecimal number into binary number System, Memory Addressing and its Importance, ASCII and EBCDIC coding System					
Unit III	Lecture-11				
DOS & Windows Operating Systems: Hardware and Software, Types of Softwares, Introduction and need of operating system, Types of operating system, dos operating system, Types of dos Commands, operating system as a resource manager; BIOS; System utilities - Editor, Loader, Linker, File Manager. Concept of GUI and CUI standards. Directories and files, wild cards, autoexec.bat, config. says, features of Window desktop, components of Window, function of each component of Window, method of starting a program using start button, understand maximize, minimize, restore down and close button, uses of file and folder, method of viewing the contents of hard disk drive using explore option, control panel, disk defragmentation installation and un installation of the application software.					
Unit IV	Lecture-9				
Fundamentals of Internet: Concepts of computer Network, Client Server Model, Peer to Peer Model, Networking Devices: Switch, Router, Hub, Bridge, Gateway, LAN, MAN, WAN, Topology, Internet, Intranet, Extranet, internet service provider and its relevance, role of the modem in accessing the internet, installation procedure of a modem using control panel, purpose of web browser software, URL,URI, URN, WWW, FTP,HTTP,RDC(Remote Desktop Connection), Telnet, Email, process of sending and receiving e-mail, transmission modes, IP address and its format, MAC Address, DNS, search engines, social network sites, internet security, Firewall, Cloud Computing and its services					
Unit V	Lecture-9				



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