Syllabus for Bachelor of Computer Application (BCA) Programme

(Effective for Students Admitted in Academic Session 2018-2019)

Detailed Syllabus

Semester V

Paper: Cyber Security
Code : BCAN-501
Contacts Hours / Week : 4L+1CE
Credits : 3

1. Module I: Fundamentals (4L) Fundamentals of data communication and networking, Network Reference Models: OSI and TCP/IP Models, 3 way handshake and TCP flags, Network address translation (NAT) concept, Network Transmission media and network devices Information Security definition, Information security goals (Confidentiality, Integrity and availability)
2. Module II: Hacking concepts (6L) Hacking, Types of Hacking/Hackers, what is Cybercrime, Types of cybercrime, Classifications of Security attacks (Passive Attacks and Active Attacks) Essential Terminology (Threat, Vulnerability, Target of Evaluation, Attack, Exploit). Concept of ethical hacking, Phase of Ethical Hacking, Hacktivism
3. Module III: Cyber Law (4L) Cyber terrorism, Cyber laws, What offences are covered under these laws (Hacking, Data theft, Identity theft (including Password Theft), Email spoofing, Sending offensive messages, Voyeurism, Cyber terrorism) Punishment for cyber crime in India
4. Module IV: Protocols & Proxy (6L) Some protocols (HTTP, HTTPS, FTP, SSH, TELNET, SMTP, DNS, POP3, and related ports), proxy concept, different types of proxy (forward and reverse proxy concept), proxy chain
5. Module V: Cryptography and Steganography (3L) Basic concepts of Cryptography and Steganography
6. Module VI: Malware (3L) About Malware, Types of Malware (Virus, worm, Trojan horse, spyware, adware, ransomware), Type of Computer Viruses(File Virus, Boot sector virus, Macro virus, Electronic mail (email) virus, Multi-variant virus) some indications of a malware attacks, Popular Antivirus programs, basic idea of how antivirus identifies a virus (Signature-based detection, Heuristics-based detection , Cloud- based detection) about VirusTotal website
7. Module VII: DOS, IDS, IPS (3L) Denial of service attack, Distributed Denial of service attack, Intrusion Detection System, snooping, Eavesdropping, Key loggers and Firewall, BOTs/BOTNETS, Intrusion Detection System, Intrusion Prevention System
8. Module VIII: Password (2L) About Password, Different types of password (Biometric, Pattern based Graphical password, Strong Password technique, Types of Password attacks
9. Module IX: Web Application Based Threats(2L) Cross-site scripting, SQL injection, Command injection, Buffer overload, Directory traversal, Phishing scams, Zombies, Drive by downloads
10. Module X: Wireless Networking (4L) Concept of wireless networking, Wireless standards, Common term used in wireless networking (WLAN, Wireless, Wireless Access point, cellular, Attenuation, Antenna, Microwave, Jamming, SSID, Bluetooth, Wi-Fi hotspots) What is Wi-Fi, Wireless attacks(War Driving, War Walking: War Flying, War Chalking, Blue Jacking) , How to secure wireless networks
11. Module XI: Stay Secure in digital World(3L) How to stay secure in digital World, have strong password, encrypt your data, security suit software, firewall setup, update os

Suggested Readings:

1. **Data communication and Networking by Behrouz A. Forouzan, McGraw Hill Education (India) Pvt. Ltd.**
2. **Certified Ethical Hacker Certification Exam by William Manning**
3. **Fundamentals of Cyber Security By Mayank Bhushan, BPB Publications**

Syllabus for Bachelor of Computer Application (BCA) Programme
(Effective for Students Admitted in Academic Session 2018-2019)

Paper: Unix and Shell Programming
Code : BCAN-502
Contacts Hours / Week : 4L+1CE
Credits : 4

1. Module I: Introduction to UNIX Operating System (8L)

1. Introduction to UNIX

UNIX operating system, UNIX architecture: Kernel and Shell, Files and Processes, System calls, Features of UNIX, POSIX and single user specification, Internal and external commands

2. Utilities of UNIX

Calendar (cal), Display system date (date), Message display (echo), Calculator (bc), Password changing (password), Knowing who are logged in (who), System information using uname, File name of terminal connected to the standard input (tty)

3. UNIX file system

File system, Types of file, File naming convention, Parent – Child relationship, HOME variable, inode number, Absolute pathname, Relative pathname, Significance of dot (.) and dotdot (..), Displaying pathname of the current directory (pwd), Changing the current directory (cd), Make directory (mkdir), Remove directories (rmdir), Listing contents of directory (ls), Very brief idea about important file systems of UNIX: /bin, /usr/bin, /sbin, /usr/sbin, /etc, /dev, /lib, /usr/lib, /usr/include,
/usr/share/man, /temp, /var, /home

2. Module II: Files (8L)

1. Ordinary file handling

Displaying and creating files (cat), Copying a file (cp), Deleting a file (rm), Renaming/ moving a file (mv), Paging output (more), Printing a file (lp), Knowing file type (file), Line, word and character counting (wc), Comparing files (cmp), Finding common between two files (comm), Displaying file differences (diff), Creating archive file (tar), Compress file (gzip), Uncompress file (gunzip), Archive file (zip), Extract compress file (unzip), Brief idea about effect of cp, rm and mv command on directory

2. File attributes

File and directory attributes listing and very brief idea about the attributes, File ownership, File permissions, Changing file permissions – relative permission & absolute permission, Changing file ownership, Changing group ownership, File system and inodes, Hard link, Soft link, Significance of file attribute for directory, Default permissions of file and directory and using umask, Listing of modification and access time, Time stamp changing (touch), File locating (find)

3. Module III: Shell and Process (8L)

1. Shell

Interpretive cycle of shell, Types of shell, Pattern matching, Escaping, Quoting, Redirection, Standard input, Standard output, Standard error, /dev/null and /dev/tty, Pipe, tee, Command substitution, Shell variables

2. Process

Basic idea about UNIX process, Display process attributes (ps), Display System processes, Process creation cycle, Shell creation steps (init -> getty -> login -> shell), Process state, Zombie state, Background jobs (& operator, nohup command), Reduce priority (nice), Using signals to kill process, Sending job to background (bg) and foreground (fg), Listing jobs (jobs), Suspend job, Kill a job, Execute at specified time (at and batch)

4. Module IV: Customization and Filters (8L)

1. Customization

Use of environment variables, Some common environment variables (HOME, PATH, LOGNAME, USER, TERM, PWD, PS1, PS2), Aliases, Brief idea of command history

2. Filters

Prepare file for printing (pr), Custom display of file using head and tail, Vertical division of file (cut), Paste files (paste), Sort file (sort), Finding repetition and non- repetition (uniq), Manipulating characters using tr, Searching pattern using grep, Brief idea of using Basic Regular Expression (BRE), Extended Regular Expression (ERE), and egrep, grep –E

5. Module V: Shell script & System Administration (8L)

1. Introduction to shell script

Simple shell scripts, Interactive shell script, Using command line arguments, Logical operator (&&, ||), Condition checking (if, case), Expression evaluation (test, []), Computation (expr), Using expr for strings, Loop (while, for), Use of positional parameters

2. System Administration

Essential duties of UNIX system administrator, Starting and shutdown, Brief idea about user account management (username, password, home directory, group id, disk quota, terminal etc.)

Suggested Readings:

1. **UNIX-Concepts & Applications, Sumitava Das, TMH**
2. **Learning UNIX Operating System, Peek, SPD/O'REILLY**
3. **Understanding UNIX, Srirengan, PHI**
4. **Essentials Systems Administration, Frisch, SPD/O'REILLY**

Syllabus for Bachelor of Computer Application (BCA) Programme
(Effective for Students Admitted in Academic Session 2018-2019)

Paper: Management and Accounting
Code : BCA(BBA)N-501
Contacts Hours / Week : 4L+1CE
Credits : 2

1. Module I: Financial Accounting (15L) 1. Basic Concept of Accounting 2. Concepts and Conventions of Accounting 3. Journal Entries and Ledger Posting 4. Trial Balance. 5. Financial Statement
2. Module II: Cost Accounting (10L) 1.BasicConceptofCost2.ClassificationofCost3.CostSheet4.Materials-EOQ,LIFOandFIFO 5. Labour - Wage payment System (Piece Rate, Time Rate, Halsey and Rowan Scheme) 6. Overheads- Meaning and Distribution (Primary Distribution)
3. Module III: Management Accounting (15L) 1. Basics of Management (Planning, Scheduling, Organizing, Staffing, Directing and Controlling) 2. Sources of Finance- long Term and Short Term 3. Cost-Volume-Profit Analysis 4. Capital Budgeting 5. Budget and Budgetary Control (Cash and Flexible Budget) 6. Investment of Funds [Conceptual Framework of Mutual Fund and Systematic Investment Plan (SIP)]

Suggested Readings:

1. **Management Accounting, Khan & Jain, TMH**
2. **Cost and Management Accounting, Basu & Das, Rabindra Library**
3. **Economics for Engineers, Partha Chatterjee, Vrinda Publications P Ltd**
4. **Modern Accountancy, Hanif & Mukherjee, TMH**