Course Name: BACHELOR OF COMPUTER APPLICATIONS

Self-Learning Courses:

Subject	Credit	Ext =Tot	Subject Code
UNIX and Shell Programming	5	100 = 100	U1CASL51
System Software	5	100 = 100	U1CASL52

Self-Learning Courses
BCA - UNIX and Shell Programming

Credit: 5   **Subject Code: U1CASL51**

Total Marks: 100

Objectives:
➤ To know about to get through understanding of the kernel.
➤ To understand the file organization and management.
➤ To know the various system calls.
➤ To have knowledge of process architecture, process control and scheduling and memory management.

Unit I

Getting Started: The Operating System-The UNIX Operating System-Knowing Your Machine-Knowing Your Keyboard-The System Administrator- Logging In and Out-Trying Out Some Commands-Two important Observations-When Things Go Wrong-Working with Files and Directories-How it All Clicked-Linux and GNU-Inside UNIX.

Understanding the UNIX Command: General Features of a Command-The PATH: Locating Commands-Internal and External Commands-Command Structure-Flexibility of Command Usage-man: On-Line Help-The man Documentation- info:The Texinfo Documentation-whatis and apropos: Which Command Will Do the job.

Unit II

General-Purpose Utilities: passwd: Change your Password-who and w: Know the Users-tty: Know Your Terminal –lock: Lock Your Terminal-stty: Set Terminal Characteristics-script:Record Your Session-clear and tput: Clear Your Screen-uname:Know Your Machine's Name-date:Display the System Date-cal:The Calendar-calendar:A Useful Reminder Mechanism-bc:The Calculator.

The vi/vim Editor: Vi Preliminaries-Quitting vi-Inserting and Replacing Text-Saving Text-Exit to the UNIX Shell- String Search –Searching with Regular Expressions-Search and Replace-Handling Multiple Files-Marking Text –Filtering Text-Named Buffers-Recovering Multiple Deletions-Abbreviating Text-Customizing the Keyboard-Customizing the Environment.

Unit III

The File System:The File-What's in a (File) Name-The Parent-Child Relationship-The UNIX File System-pwd: Knowing Your Current Directory-Absolute Pathnames-cd: Changing Directories-Relative Pathnames-mkdir: Making Directories-rmdir: Removing Directories- cp: Copying Files- rm: Deleting Files-mv: Renaming Files-cat: Displaying and Creating Files-

file:Know the File Types-lp and cancel:Printing a File-df: Finding Out the Free Disk Space-du:Finding Out Your Own Consumption-compress,gzip and zip:Compress Your Files.

File Attributes: ls-ls –l-Listing Directory Atrributes-File Permission-chmod:Changing File Permissions-Directory Permissions-umask:Default File Permissions-File Ownership-chown and chrp:Changing File Ownership-File Modificationans Acess Times-touch: Changing the Time Stamps-File systems and Inodes-ln-Symbolic Links-find.

Unit IV

The Shell: The Shell as Command Processor-Pattern Matching-The Wild Cards-Escaping-Quoting-Escaping and Quoting in echo-Redirection-/dev/null and/dev/tty:Two Special Files-Pipes-tee:Splitting a Stream-Command Substitution-Shell Variables- Shell Scripts-The Shell's Treatment of the Command Line-The other Shells-More Wild Cards in the Korn Shell and bash.

Simple Filters:more: Paging Output-wc: Line,Word and Character Counting-od: Displaying Data in Octal-pr: Paginating Files-cmp: Comparing Two Files-diff: Converting One File to Another-comm: What is common?- head: Displaying the Beginning of a File- tail: Displaying the End of a File-cut: Slitting a File Vertically-paste: Pasting Files-sort: Ordering a File-tr: Translating Characters-uniq: Locate Repeated and Non repeated Lines-nl: Line Numbering.

Unit V

Filters using Regular Expressions-grep and sed: The sample Database-grep-grep options-Regular Expressions-Round One-egrep and fgrep-Regular Expressions-Round Two-sed-Line Addressing Context Addressing- Editing Text-Substitution-Regular Expressions-Round-Three.

Programming with awk: awk Preliminaries-Splitting a Line into Fileds-printf-The Comparison Operators-Number Processing-variables-Reading the Program from a File-The BEGIN and END Sections-Positional Parameters-getline:Making awk Interactive-Built-In Variables-Arrays-Functions-Control Flow-The if Statement-Looping:for and while.

Text Book:

Your UNIX the Ultimate Guide, Sumitabha Das, Tata McGraw – Hill Publishing Company Limited, New Delhi, 2009.

        Unit I - Chapter 1, 2
        Unit II - Chapter 3, 4(4.1 to 4.5,4.14 to 4.24)
        Unit III - Chapter 6,7
        Unit IV - Chapter 8,9(9.1 to 9.15)
        Unit V - Chapter 15,16

Reference Book:

UNIX Shell Programming, Yashavant P Kanetkar, BPB Publications, 1996.

System Software

Credit: 5   **Subject Code: U1CASL52**
Total Marks: 100
Objectives:
 ➢ It covers the design and implementation of various types of system utilities software.
 ➢ It illustrates how the utility software interacts with operating system.

Unit I
Background: Introduction-System software and Machine Architecture – The simplified Instructional Computer – Traditional Machines – RISC Machines.

Unit II
Assemblers: Basic Assembler Functions – Machine-Dependent Assembler Features – Machine-Independent Assembler Features – Assembler Design Options.

Unit III
Loaders and Linkers: Basic Loader Functions – Machine-Dependent Loader Features - Machine-Independent Loader Features – Loader Design Options.

Unit IV
Macro Processors: Basic Macro Processor Functions - Machine-Independent Macro Processor Features – Macro Processor Design Options.

Unit V
Compilers: Basic Compiler Functions - Machine-Dependent Compiler Features – Machine-Independent Compiler Features – Compiler Design Options.

Text Book:
System Software, Leland L. Beck, D. Manjula, 3rd Editions, Pearson Education, 2008.

Unit I	:	Chapter 1
Unit II	:	Chapter 2 (2.1 to 2.4)
Unit III	:	Chapter 3 (3.1 to 3.4)
Unit IV	:	Chapter 4 (4.1 to 4.3)
Unit V	:	Chapter 5 (5.1 to 5.4)

Reference Book:
System Software, J. Nithyashri, 2nd edition, Tata McGraw Hill Education Pvt. Ltd., New Delhi, 2010.