

| GANPAT UNIVERSITY   |   |    |                 |    |  |  |    |           |       |
|---|---|----|-----------------|----|--|--|----|-----------|-------|
| FACULTY OF TECHNOLOGY   |   |    |                 |    |  |  |    |           |       |
| Programme   | Bachelor of Technology  |    |                 |    | Branch/Spe<br>c.                             | Computer Science & Engineering<br>(CBA/MA/BDA) |    |           |       |
| Semester  | II  |    |                 |    | Version                                      | 1.0.0.1  |    |           |       |
| Effective from Academic Year  |   |    | 2018-19         |    | Effective for the batch Admitted in          |  |    | June 2018 |       |
| Subject code  | 2CSE204   |    | Subject Name    |    | Basics of Operating System & Shell Scripting |  |    |           |       |
| Teaching scheme   |   |    |                 |    | Examination scheme (Marks)                   |  |    |           |       |
| (Per week)  | Lecture(DT)   |    | Practical(Lab.) |    | Total  |  | CE | SEE       | Total |
|   | L   | TU | P               | TW |  |  |    |           |       |
| Credit  | 2   | 0  | 1               | 0  | 3  | Theory   | 40 | 60        | 100   |
| Hours   | 2   | 0  | 2               | 0  | 4  | Practical                                      | 30 | 20        | 50    |
| Pre-requisites:   |   |    |                 |    |  |  |    |           |       |
| Introductory knowledge of Windows Operating System, Open Source Systems and programming fundamentals.   |   |    |                 |    |  |  |    |           |       |
| Learning Outcome:   |   |    |                 |    |  |  |    |           |       |
| Students successfully completing this course will be able to:   |   |    |                 |    |  |  |    |           |       |
| <ul style="list-style-type: none"> <li>• Understand Linux computing environment and how to access Linux file system</li> <li>• Learn how to access and manage files and directories and how to apply file systems and file utilities</li> <li>• Learn Linux System Administration and Network Administration</li> <li>• Identify shell features and environmental customization and create shell scripts</li> </ul> |   |    |                 |    |  |  |    |           |       |
| Theory syllabus   |   |    |                 |    |  |  |    |           |       |
| Unit  | Content   |    |                 |    |  |  |    |           | Hrs   |
| 1   | <b>Basic of Operating System</b><br>Architecture of OS (Ex. Monolithic, Microkernel, Layered ,Exokernel), Operating system objectives and functions, Virtual Computers, Interaction of O. S. & hardware architecture, Evolution of operating systems, Batch, multiprogramming. Multitasking, Multiuser, parallel, distributed & real –time O.S. ,System calls, Windows Vs Linux |    |                 |    |  |  |    |           | 5     |
| 2   | <b>File Manipulation</b><br>Managing files/directory from command line, Creating Viewing and Editing Text files, File Permissions.  |    |                 |    |  |  |    |           | 3     |
| 3   | <b>User administrations</b><br>Users and Groups, Superusers, Managing User and Group accounts, managing passwords.  |    |                 |    |  |  |    |           | 2     |
| 4   | <b>Process Handling</b><br>Processes: Foreground and Background Processes, Controlling Jobs, Killing Processes, Monitoring Process Activities. System processes and daemons, controlling services and daemons.  |    |                 |    |  |  |    |           | 2     |
| 5   | <b>Authentication and Logs</b><br>SSH, SSH key based Authentication,SSH service configuration, Restricting SSH logins, log architecture, Journal entries, Adjusting system time   |    |                 |    |  |  |    |           | 1     |
| 6   | <b>Archiving files</b><br>tar archives, zip archives, copying files between systems securely, Synchronising files and directories   |    |                 |    |  |  |    |           | 1     |
| 7   | <b>Installing and Updating Software packages</b><br>Subscriptions,RPM software packages, YUM, YUM repositories  |    |                 |    |  |  |    |           | 1     |

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|---|---|---|
| 8   | <b>Accessing Linux File Systems</b><br>Identifying file system and devices, Mounting and Unmounting, Links and Locating files   | 2 |
| 9   | <b>Fundamentals of Shell Programming</b><br>Introduction to shell and Shell programming, Applications, Editors, General Purpose Commands : (Help)Variables and Parameters, Special Characters, Quoting, Exit and ExitStatus,Manipulating Variables, Loops and Branches, Array, User defined functions | 4 |
| 10  | Command Substitution, Arithmetic Expansion, Filters, Regular Expressions,I/O Redirection, Subshell,Restricted Shells,Process Substitution, Aliases.   | 9 |
| 11  | Self Study<br>Mobile Operating systems:Android  |   |
| <b>Practical content</b>  |   |   |
| <ol style="list-style-type: none"> <li>1. Understanding of fundamental Linux Commands</li> <li>2. Shell script development for handling files and directories</li> <li>3. Shell script development for user administration</li> <li>4. Shell script development for handling processes</li> <li>5. Shell script development for authentication and logs</li> <li>6. Shell script development for archiving files</li> <li>7. Shell script development for installing/updating software packages</li> <li>8. Shell script development for accessing Linux file systems</li> <li>9. General shell script development for regular expressions, filters and pipes.</li> </ol> |   |   |
| <b>Text Books</b>   |   |   |
| 1   | Red Hat System Administration   |   |
| 2   | Operating System Concepts,8th Edition by silberschatz galvin gagne  |   |
| 3   | Linux Shell Scripting, Step by Step   |   |
| <b>Reference Books</b>  |   |   |
| 1   | Beginning the Linux Command Line by Sander van Vugt   |   |
| 2   | Linux Bible by Christopher Negus and Christine Bresnahan  |   |