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## SECOND-YEAR OF BACHELOR OF COMPUTER SCIENCE MAJOR REVISED SYLLABUS ACCORDING TO CBCS NEP2020

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COURSE TITLE: PRACTICAL OF ADV.JAVA+LINUX

SEMESTER-IV, W.E.F. 2024-2025

**Recommended by the Board of Studies in Computer Science  
And**

**Approved by the Academic Council**

Devrukh Shikshan Prasarak Mandal's

Nya. Tatyasaheb Athalye Arts, Ved. S. R. Sapre Commerce, and  
Vid. Dadasaheb Pitre Science College (Autonomous), Devrukh.  
Tal. Sangameshwar, Dist. Ratnagiri-415804, Maharashtra,  
India

Academic Council Item No: \_\_\_\_\_

Name of the Implementing Institute	:	Nya. Tatyasaheb Athalye Arts, Ved. S. R. Sapre Commerce, and Vid. Dadasaheb Pitre Science College (Autonomous), Devrukh. Tal. Sangameshwar, Dist. Ratnagiri-415804,
Name of the Parent University	:	University of Mumbai
Name of the Programme	:	Bachelor of Science
Name of the Department	:	Computer Science
Name of the Class	:	Second Year
Semester	:	Four
No. of Credits	:	02
Title of the Course	:	Practical of Adv. Java +Linux
Course Code	:	S404CSP
Name of the Vertical in adherence to NEP 2020	:	Major and Minor
Eligibility for Admission	:	Any 12 <sup>th</sup> Pass seeking Admission to Degree Programme in adherence to Rules and Regulations of the University of Mumbai and Government of Maharashtra
Passing Marks	:	40%
Mode of Assessment	:	Formative and Summative
Level	:	UG
Pattern of Marks Distribution for TE and CIA	:	60:40
Status	:	NEP-CBCS
To be implemented from Academic Year	:	2023-2024
Ordinances /Regulations (if any)		

*Nya. Tatyasaheb Athalye Arts, Ved. S. R. Sapre Commerce and Vid. Dadasaheb Pitre Science College, Devrukh (An Autonomous College Affiliated with University of Mumbai)*

## Syllabus for Second Year of Bachelor of Science in Computer Science

(With effect from the academic year 2024-2025)

**SEMESTER-IV**

**Paper No.– IV**

**Course Title: Practical of Adv. Java +Linux**

**No. of Credits - 02**

**Type of Vertical: Major and Minor**

**COURSE CODE: S404CSP**

**Learning Outcomes Based on BLOOM's Taxonomy:**

After completing the course, the learner will be able to...		
Course Learning Outcome No.	Blooms Taxonomy	Course Learning Outcome
CLO-01	Remember	Understand the concepts related to Java Technology
CLO-02	Apply	Explore and understand use of Java Server Programming
CLO-03	understand	Understanding knowledge of Linux, from both a graphical and command line perspective, allowing them to easily use any Linux distribution.

## Syllabus for Second Year of Bachelor of Science in Computer Science

(With effect from the academic year 2024-2025)

**SEMESTER-IV**

**Paper No.– 4**

**Course Title: Practical of Adv. Java +Linux**

**No. of Credits - 02**

**Type of Vertical: Major and Minor**

**COURSE CODE: S404CSP**

<b>COURSE CONTENT</b>			
<b>Module No.</b>	<b>Content</b>	<b>Credits</b>	<b>No. of Lectures</b>
1	<ol style="list-style-type: none"> <li>1. Develop the presentation layer of Library Management software application with suitable menus.</li> <li>2. Design suitable database for Library Management System.</li> <li>3. Develop business logic layer for Library Management System.</li> <li>4. Develop Java application to store image in a database as well as retrieve image from database.</li> <li>5. Write a Java application to demonstrate servlet life cycle.</li> <li>6. Design database for student administration. Develop servlet(s) to perform CRUD operations.</li> <li>7. Create Employees table in EMP database. Perform select, insert, update, and delete operations on Employee table using JSP.</li> <li>8. Write a Student class with three properties. The useBean action declares a JavaBean for use in a JSP. Write Java application to access JavaBeans Properties.</li> <li>9. Design application using Struts2. Application must accept user name and greet user when command button is pressed.</li> <li>10. Write Java application to encoding and decoding JSON in Java.</li> </ol>	01	15
2	<ol style="list-style-type: none"> <li>1. Linux Installation:                             <ol style="list-style-type: none"> <li>a. Install your choice of Linux distribution e.g. Ubuntu, Fedora, Debian.</li> <li>b. Try different installation media like CD/DVD, USB Drive to install.</li> <li>c. Customize desktop environment by changing different default options like changing default background, themes, and screen savers</li> </ol> </li> </ol>	01	15

	<p>2.a. Screen Resolution: Ascertain the current screen resolution for your desktop.</p> <p>b. Networking: Get the current networking configuration for your desktop. Are you on a wired or a wireless connection? What wireless networks are available, if any?</p> <p>c. Time Settings Change the time zone of your system to (or New York Time if you are currently in Indian time). How does the displayed time change? After noting the time change, change the time zone back to your local time zone.</p> <p>3. Installing and Removing Software:</p> <p>a. Install vlc package. Verify that it runs, and then remove it.</p> <p>4. Documentations:</p> <p>a. Finding Info Documentation: From the command line: bring up the info page for the grep command. Bring up the usage section.</p> <p>b. Finding man pages From the command line: Bring up the man page for the „ls“ command. Scroll down to the EXAMPLES section.</p> <p>c. Finding man pages by Topic What man pages are available that document file compression?</p> <p>d. Finding man pages by Section From the command line, bring up the man page for the printf library function. Which manual page section are library functions found?</p> <p>e. Command-Line Help List the available options for the mkdir command. How can you do this?</p> <p>5. Command line operations:</p> <p>a. Install any newpackage on your system</p> <p>b. Remove the package installed</p> <p>c. Find the passwd file in / using find command</p> <p>d. Create a symbolic link to the file you found in last step</p> <p>e. Create an empty file example.txt and move it in /tmp directory using relative pathname.</p> <p>f. Delete the file moved to /tmp in previous step using absolute path.</p> <p>g. Find the location of ls, ps, bash commands.</p> <p>6. File Operations:</p> <p>a. Explore mounted file systems on your system.</p>		
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	<p>b. What are different ways of exploring mounted file systems on Linux?</p> <p>c. Archive and backup your home directory or work directory using tar, gzip commands.</p> <p>d. Use dd command to create files and explore different options to dd.</p> <p>e. Use diff command to create diff of two files.</p> <p>f. Use patch command to patch a file. And analyze the patch using diff command again.</p> <p>7. Use environment:</p> <p>a. Which account are you logged in? How do you find out?</p> <p>b. Display /etc/shadow file using cat and understand the importance of shadow file. How it's different than passwd file.</p> <p>c. Get your current working directory.</p> <p>d. Explore different ways of getting command history, how to run previously executed command without typing it?</p> <p>e. Create alias to most commonly used commands like.</p> <p>8. Linux Editors: vim/emacs</p> <p>a. Create, modify, search, and navigate a file in editor.</p> <p>b. Learn all essential commands like search, search/replace, highlight, and show line numbers.</p> <p>9. Linux Security:</p> <p>a. Use of sudo to change user privileges to root</p> <p>b. Identify all operations that require sudo privileges</p> <p>c. Create a new user and add it to sudo configuration file.</p> <p>d. Set password for new user.</p> <p>e. Modify the expiration date for new user using password ageing.</p> <p>f. Delete newly added user.</p> <p>10. Network:</p> <p>a. Get IP address of your machine using ifconfig.</p> <p>b. If IP is not set, then assign an IP address according to your</p>		
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	network settings. c. Get hostname of your machine. d. Use ping to check the network connectivity to remote machines. e. Use telnet/ssh to connect to remote machines and learn the difference between the two. f. Troubleshooting network using traceroute, ping, route commands.		
	<b>Total</b>	<b>02</b>	<b>30</b>

**Required Previous Knowledge**

Students should know basic concepts related to computer and computer handling

**Access to the Course**

The course is available for all the students admitted for Bachelor of Science (Computer Science).

**Methods of Assessment:**

Vocational Skill Courses, Skill Enhancement Courses and the courses having laboratory session shall be assessed at the end of each semester.

**Forms of Assessment**

The assessment of the course will be of Diagnostic, Formative and Summative type. At the beginning of the course diagnostic assessment will be carried out. The formative assessment will be used for the Continuous Internal Evaluation whereas the summative assessment will be conducted at the end of the term. The weightage for formative and summative assessment will be 60:40. The detailed pattern is as given below.



**Semester End Practical Examination (50 Marks)**  
**Question Paper Pattern**  
**Time: 2 hours**

Question No.	Unit/s	Question Pattern	Marks
Q.1	All	Certified Journal	05
Q.2	All	Any two experiments	40
Q.3	All	Viva based on experiments	05
		<b>Total</b>	<b>50</b>

**Grading Scale**

10 points grading scale will be used. The grading scale used is O to F. Grade O is the highest passing grade on the grading scale, and grade F is a fail. The Board of Examinations of the college reserves the right to change the grading scale.

**Reference book:**

- Herbert Schildt, Java2: The Complete Reference, Tata McGrawHill,5th Edition
- Joe Wigglesworth and Paula McMillan, Java Programming: Advanced Topics, Thomson Course Technology (SPD) ,3rd Edition
- UNIX Concepts and Applications by Sumitabha Das.
- Official Ubuntu Book, 8th Edition, by Matthew Helmke & Elizabeth K. Joseph with Jose Antonio Rey and Philips Ballew, Prentice Hall

**Text book:**

- Techmax publication book

**Additional References:**

- Advanced Java Programming, Uttam K. Roy, Oxford University Press
- The Java Tutorials: <http://docs.oracle.com/javase/tutorial/>)
- Linux kernel Home: <http://kernel.org>
- Open Source Initiative: <https://opensource.org/>
- The Linux Foundation: <http://www.linuxfoundation.org/>