Department of Computer Science and Engineering
Academic Year 2024 – 2025 (Odd Semester)

Degree, Semester & Branch **:** III Semester B.E CSE
Course Code & Title **:** CS3352 & Foundations of Data Science
Name of the Faculty member **: Dr.M.Swarna Sudha ASP** / CSE

Innovative Practice Description

- **Unit / Topic: Unit IV / Python Libraries for Data Wrangling / Data manipulation with Pandas**
- **Course Outcome:** CO4
- **Topic Learning Outcome:** TLO 8
- **Activity Chosen:** Collaborative Coding
- **Justification:**

  Collaborative learning is the educational approach of using groups to enhance learning through working together. Choosing **Pandas** for collaborative learning is justified by their foundational role in data science and data analysis. NumPy offers powerful tools for numerical operations, enabling efficient manipulation of large datasets, while Pandas provides versatile data structures like DataFrames, which simplify complex data manipulation and analysis tasks. These libraries are widely used, making them essential for students to learn. Collaborative learning with Pandas raises teamwork by allowing students to work together on real-world data challenges, enhancing their ability to analyze and draw meaningful insights from data, which are essential skills in the data-driven world.

Time Allotted for the Activity: 40 Minutes

Details of the Implementation:

- The session began with an introduction to Pandas, emphasizing its importance in data manipulation and analysis. Students were briefed on various Pandas functions that they would explore during the activity.
- The class was divided into 12 groups: 6 groups consisting of boys and 6 groups consisting of girls. The boys' groups included students **Anish Kumar R, Deepalingaraj M, Lalith Krishna V, M Sandhib K, Vignesh A P**, and **Pranav M**. The girls' groups included **Arunadevi M, Durgadevi M, Lakshitha S, Sakthi Sundari G, Sri Prishigaa R**, and **Udhayasankari R**.
- Each group was given a unique problem statement related to **Pandas manipulation functions**. These problems were designed to cover different aspects of data manipulation, such as data cleaning, filtering, merging, and aggregation.
- The students actively worked within their groups to solve the assigned problems. Each group collaborated, discussed, and practiced the functions needed to arrive at a solution.

- After solving their respective problems, each group selected one team member to explain their solution to the other groups. The team leader, who was nominated within the group, took charge of presenting the solution and answering any questions from the audience.
- This peer-to-peer teaching approach allowed students to learn from each other's experiences, ensuring that everyone understood different Pandas functions and their applications.

- **CO – PO / PSO mapping:**

CO	PO1	PO2	PO3	PO9	PO10	PO12	PSO1
CO1	3	3	3	1	1	2	3

(1 – Low 2 – Moderate 3 – High)

- **PO / PSO mapped:**

Innovative practice	PO1	PO2	PO3	PO9	PO10	PO12	PSO1
	3	3	3	1	1	2	3
Justification for correlation	Apply basic Knowledge and fundamentals in manipulation of pandas	Identify the need of Python Libraries	Able to design and develop the codes for Data wranglingg using Python Libraries	Functional individuallyin identifying the code for manipulation of panda	Share the ideas with other students in written and oral presentation skill is improved	Ability to reproduce the contents gathered through self-learning	Students will be able to apply pandas in developin g the software .

- **Images / Screenshot of the practice:**


Screenshot of the activity done by Deepalingaraj M team and Lakshitha S Team

Feedback of practice from students and other stakeholders:

- Student felt good, since they learn the concepts as a group.
- They felt that through such learning, Students actively participate and this activity encouraged the students to share their knowledge with others.

❖ ***Benefit of the practice:***

- Students are actively participated in each group.
- Students said that the activity was helpful in determining how well they understood the concept.
- Students told the teacher that the activity encouraged them to ask more questions.
- It helps the students are made to work in a team and share their ideas to others and also improve their communication skills.
- It helps to focus attention and engage students in learning.
- Through this activity the students can deeply understand the code using python libraries for Data wrangling process and how to interpret data.
- The students are made to write the program code with their own understanding mainly using the libraries and in-built functions.

❖ ***Challenges faced in implementation:***

Most of the students actively participated except few students. They are not involved to share their understanding level and raising the doubts

- Some of the students finding difficulties in expressing the ideas

References:

1. https://www.edsys.in/what-is-peer-teaching/
2. https://www.opencolleges.edu.au/informed/features/peer-teaching/
3. https://tilt.colostate.edu/TipsAndGuides/Tip/180
4. https://www.gdrc.org/kmgmt/c-learn/
5. https://www.edutopia.org/topic/collaborative-learning