# Student Feedback Analysis Report

**Project:** Task 3 – Student Feedback Analysis using Python
**Tool Used:** Jupyter Notebook (Python)
**Dataset:** Student Feedback Ratings (CSV)
**Records Analysed:** 1001 student responses

## Project Objective

The objective of this project is to analyse student feedback data collected after academic courses and learning experiences, identify satisfaction patterns, and extract actionable insights that can help improve teaching quality and overall student experience.

The analysis focuses on:

- Understanding rating trends across multiple feedback parameters
- Measuring overall satisfaction levels
- Deriving sentiment categories based on quantitative feedback
- Providing data-driven recommendations for improvement

## Dataset Overview

The dataset consists of numerical ratings provided by students on a scale of 1 to 10 for the following aspects:

- Subject Knowledge
- Teaching Clarity
- Use of Presentations
- Assignment Difficulty
- Doubt Solving
- Course Structure
- Student Support
- Course Recommendation

Each row represents feedback from one student.
N**o missing values** were found in the dataset.

## Data Preparation & Feature Engineering

Key preprocessing steps performed:

- Removed unnecessary index column
- Verified data types and missing values
- Created a new metric: **Overall Satisfaction Score**, calculated as the average of all feedback parameters per student

This composite score enables a holistic evaluation of student satisfaction.

# Ratings Analysis (Graphs of Ratings)

## 1. Distribution of Overall Satisfaction

A histogram of overall satisfaction scores shows that:

- Most students rated their experience in the **moderate to high satisfaction range**
- Extremely low satisfaction scores are comparatively rare
- The distribution is slightly skewed toward higher ratings, indicating a generally positive learning experience

## 2. Average Rating by Feedback Category

A bar chart of average ratings across all parameters reveals:

### Highest-Rated Areas

- Subject Knowledge
- Teaching Clarity
- Course Recommendation

These indicate strong instructional expertise and course relevance.

### Lower-Rated Areas

- Assignment Difficulty
- Student Support
- Course Structure

These represent potential areas for improvement.

# Sentiment Analysis Summary (Rating-Based Proxy)

Since the dataset does not contain textual feedback, sentiment analysis was derived using a **rating-based classification approach**, which is an accepted industry practice when textual data is unavailable.

### Sentiment Mapping Logic

- **Positive:** Overall Satisfaction ≥ 7
- **Neutral:** Overall Satisfaction between 4 and 6.9

- **Negative:** Overall Satisfaction < 4

### Sentiment Distribution

The pie chart visualization shows:

- A clear majority of responses fall under **Positive sentiment**
- A smaller but significant portion is **Neutral**
- A minimal fraction reflects **Negative sentiment**

This indicates that while most students are satisfied, there is room to convert neutral experiences into positive ones.

## Correlation Analysis

A correlation heatmap was used to examine relationships between feedback parameters.

Key observations:

- Teaching clarity has a strong positive correlation with course recommendation
- Subject knowledge positively influences overall satisfaction
- Student support shows moderate correlation with multiple parameters, suggesting it plays a supporting but important role

These insights help identify which factors most strongly impact student perception.

## Key Insights

- Overall student satisfaction is generally high across the dataset
- Teaching quality and subject expertise are clear strengths
- Assignment difficulty and student support consistently score lower than other parameters
- Improvements in course structure and support services could significantly raise satisfaction levels
- Student recommendations are strongly influenced by teaching clarity and subject understanding

## Key Recommendations

Based on the analysis, the following actions are recommended:

1. **Improve Assignment Design**
    - Balance difficulty with clarity
    - Provide detailed guidelines and examples
2. **Enhance Student Support Systems**
    - Introduce more doubt-clearing sessions

- Improve access to academic assistance

3. **Refine Course Structure**
    - Organize content in a more progressive learning flow
    - Clearly define learning outcomes for each module
4. **Leverage Teaching Strengths**
    - Encourage best practices from high-performing instructors
    - Use peer mentoring and teaching workshops

# Conclusion

This project demonstrates how structured student feedback can be transformed into actionable insights using data analysis techniques. By combining rating analysis, sentiment categorization, and visualization, the study provides a clear understanding of student satisfaction and highlights areas that require attention.

The findings can support academic decision-making, improve learning experiences, and enhance overall institutional effectiveness.