# Consistency in Academic Performance of Students across Semesters with Reference to their CGPA

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**ABSTRACT**

The entire world is going through a completely new and strange situation due to COVID-19 pandemic which has thrown the system of higher education out of gear. Final year/semester students are anxious about whether examinations will be conducted or not. There are contradictory opinions about this from various sections and stakeholders. Hence, purely due to academic curiosity, the present study was undertaken to ascertain whether there is any consistency of average performance of students over different semesters with their final CGPA. For this purpose, 253 engineering students were selected randomly. The study adopted the ex-post-facto method. The data were analysed using the t-test. It was found that (a) When students are coming to the university from a junior college in their first year of engineering, they are new to the system and its requirements and need time to adjust to a new system. Hence, the inclusion of first year performance does not show any consistency with the final CGPA (b) There is a consistency in average performance of the entire sample of students considered from Semester 2 to 7 and 3 to 7 with their final CGPA since the average performance of semesters 2 to 7 or semesters 3 to 7 does not show significant difference with the final CGPA. Therefore, if final year examination is not conducted, then the university can declare results on the basis of consistency in the average performance of either semesters 2 to 7 or 3 to 7 (c) The average of semesters 1 to 7, 4 to 7, 5 to 7 and 6 to 7, does not show consistency with the final CGPA of the total sample of students and (d) It implies that consistency matters in average performance of students over semesters 2 to 7 or 3 to 7 vis-à-vis final CGPA.

**Keywords:** Engineering Students, Semester System, Performance, CGPA

Mumbai is a metropolitan city attracting people from all over India in search of job. It is known to have a capacity to absorb everyone. In the process, it has become one of the most over-populated cities with a population of 19,478,447 and population density of 32,303 per sq.km (https://en.wikipedia.org/wiki/List_of_cities_proper_by_population_density). It is known to be the most densely populated city in the world. The current population of Maharashtra State is 124,862,220 (https://www.google.com/search?rlz=1C1CHBF_enIN821IN821&sxsrf=ALeKk00lBVnOnv7sF5rIkyNOEUCV-xEHiQ:1592901619159&q=maharashtra+population+2020&sa=X&ved=2ahU KEw js8K 5xJfqAhVoyTgGHU32BsUQ1QIoAXo ECBMQAg&biw=1366&bih=657). Given such a huge population of Mumbai in particular and Maharashtra in general, the chances of spread of Corona Virus and subsequent possibility of aggravation in number of deaths due to it cannot be underestimated. This is particularly more pronounced due to the high migration rates into Maharashtra from other States, congested slums

and tremendously crowded public transport. The situation in Maharashtra regarding COVID-19 is alarming. In addition, there is a sizable internal and external migration from Mumbai.

There is a controversy going on currently regarding whether university examinations for final semester should be conducted or not. Pros and cons of conducting university examinations are being discussed vociferously by different sections and stakeholders. Some are saying that examinations must be conducted while others are saying that examinations should not/cannot be conducted with divergent opinions and the reasons thereof.

The former chairperson of UGC, Prof. Vedprakash (Hindustan Times, 27th July 2020) has identified four major perspectives related to final year/semester examination, namely, (a) professional credibility, (b) legal defensibility, (c) safety and security of students and (d) public acceptability. The first one, namely, professional credibility is an important issue. The ultimate outcome of any instructional efforts is determined by conducting examinations. If students are promoted without determining whether the learning is adequately complete for going on to the next stage, then it is quite legitimate to raise queries about the professional credibility of the education system and its process. The second one, namely, legal defensibility of not conducting examinations would arise if students have worked much harder for the final year/semester as compared to earlier examinations and yet they are promoted on the basis of their earlier performance. The third one, namely, parents' reservations and anxiety about safety and security of students is also an important issue especially, if institutions are not able to develop foolproof system of conducting examinations. Prof. Vedprakash further identifies the fourth perspective, namely, that of public acceptability if students are given degrees without identifying a viable alternative of conducting examinations.

At the international level, Gwang-Chol Chang, Chief of Section of Education Policy referred to UNESCO's recent rapid global analysis and stated that 69.05% of the 84 countries surveyed have postponed or rescheduled exams, 27.38% introduced alternative methods such as online or home-based testing, 26.19% maintained exams while in 13.1% countries, exams have been cancelled completely. Xiaoting Huang, Director with the Hong Kong Examinations

and Assessment Authority of China states that *"Probably there is no perfect solution but our key strategy was to consult as many stakeholders as possible, including students, parents, teachers and medical experts."* (https://en.unesco.org/news/exams-and-assessments-covid-19-crisis-fairness-centre).

Based on the discussions mentioned in the earlier paragraphs, the researchers decided to conduct the present study. The topic of this paper has emerged purely out of academic curiosity.

## Rationale of the Study

Under the circumstances mentioned in the preceding section, the researchers found the topic of academic interest and thought that it is imperative that an analysis of past data be done with purely an academic interest so as to find out whether students' CGPA differs significantly from first to seventh semesters in a four-year degree programme. This is essential in order to decide whether conducting final year examination will help elevate students' CGPA or not. It will also throw light on whether students work consistently throughout their eight semesters of undergraduate college. Universities across India have adopted semester system and examinations are conducted after each semester. It would be interesting to find out whether there is any consistency in the results or academic performance of students across semesters. This is ultimately expected to throw light on the effectiveness of the semester system.

**Statement of the Problem** : Is there any consistency in the results or academic performance of students across semesters?

## Definition of the Terms

1. **Semester**: A semester is half of a college year which is an easy way to divide the academic year into two equal halves, or semesters.

2. **CGPA**: Cumulative Grade Points Average (CGPA) is the average of grade points achieved in all subjects in all the eight semesters by a student in a four-year degree programme.

3. **Academic Performance** : It refers to the Grade Point Average (GPA) obtained by a student in all the courses in a given semester.

## Objectives of the Study

1. To compare the final CGPA of students with their average academic performance across semesters.

## Null & Alternative Hypotheses of the Study

1. **Null Hypothesis:** There is no significant difference between (i) the average academic performance Semester 1 to Semester 7 and (ii) the final CGPA by semesters of the total sample of students.

   *Alternative Hypothesis:* There is a significant difference between (i) the average academic performance of Semester 1 to Semester 7 and (ii) the final CGPA of semesters of the total sample of students.

2. **Null Hypothesis:** There is no significant difference between (i) the average academic performance of Semester 2 to Semester 7 and (ii) the final CGPA by semesters of the total sample of students.

   *Alternative Hypothesis :* There is a significant difference between (i) the average academic performance of Semester 2 to Semester 7 and (ii) the final CGPA by semesters of the total sample of students.

3. **Null Hypothesis:** There is no significant difference between (i) the average academic performance of Semester 3 to Semester 7 and (ii) the final CGPA by semesters of the total sample of students.

   *Alternative Hypothesis:* There is a significant difference between (i) the average academic performance of Semester 3 to Semester 7 and (ii) the final CGPA by semesters of the total sample of students.

4. **Null Hypothesis:** There is no significant difference between (i) the average academic performance of Semester 4 to Semester 7 and (ii) the final CGPA by semesters of the total sample of students.

   *Alternative Hypothesis:* There is a significant difference between (i) the average academic performance of Semester 4 to Semester 7 and (ii) the final CGPA by semesters of the total sample of students.

5. **Null Hypothesis:** There is no significant difference between (i) the average academic performance of Semester 5 to Semester 7 and (ii) the final CGPA by semesters of the total sample of students.

   *Alternative Hypothesis:* There is a significant difference between (i) the average academic performance of Semester 5 to Semester 7 and (ii) the final CGPA by semesters of the total sample of students.

6. **Null Hypothesis:** There is no significant difference between (i) the average academic performance of Semester 6 to Semester 7 and (ii) the final CGPA by semesters of the total sample of students.

   *Alternative Hypothesis:* There is a significant difference between (i) the average academic performance of Semester 6 to Semester 7 and (ii) the final CGPA by semesters of the total sample of students.

## Sample: Its Nature, Size and Sampling Techniques

The sample consisted of students from the Engineering discipline. In particular, it consisted of those students who completed their engineering in the subjects of Computer Science, Information Technology, Electronics & Communication Technology and Electronics and whose final eighth semester results were declared in Summer 2019. There were total 253 engineering students included in the study.

The sample of students was selected from a college affiliated to a state university situated in Western India. The study adopted a two-stage sampling technique. At the first stage, a college was selected using simple random sampling technique. At the second stage, four programmes, namely, BE in Computers, BE in Information Technology, BE in Electronics & Communication Technology and BE in Electronics were selected using simple random sampling technique. All students who appeared for the eighth semester examination in 2019 from the above four programmes were included in the study.

## Methodology of the Study

The study has adopted the ex-post-facto method in that, students' average academic performance

of Semester 1 to Semester 7 and their final CGPA obtained in all the semesters have been compared after the students appeared for all the eight semesters and their results are declared.

The study may also be termed as decision-oriented research since it is designed to be directly relevant to the present COVID-19 pandemic vis-à-vis the examination system in India. This could be used for managing the examination system in the current scenario for making evidence-based decisions.

## Data Analysis

The technique used to test all the hypotheses mentioned earlier is the t-test. The following table shows the relevant descriptive statistics of semester-wise Average Academic Performance (AAP) of the Total Sample of Students (TSS).

**Table 1:** Semester-Wise AAP of the TSS

| Semester | Mean | SD |
|----------|--------|--------|
| 1-7 | 8.1441 | 1.0128 |
| 2-7 | 7.0788 | 0.9679 |
| 3-7 | 7.1604 | 1.0201 |
| 4-7 | 7.4893 | 1.0277 |
| 5-7 | 7.4735 | 1.0057 |
| 6-7 | 7.5011 | 0.9789 |
| CGPA | 7.1341 | 0.8949 |

Table 2 shows the mean differences in semester-wise AAP for TSS.

**Table 2:** Mean Differences in AAP by Semesters for TSS

| No. | Groups | Mean | SD | t | P-value (LoS-.01) |
|-----|--------|--------|--------|--------|--------|
| 1 | 1 to 7 | 8.1441 | 1.0128 | 12.07 | <.0001 |
|   | CGPA | 7.1341 | 0.8949 | | |
| 2 | 2 to 7 | 7.0788 | 0.9679 | **0.66** | **0.0893** |
|   | CGPA | 7.1341 | 0.8949 | | |
| 3 | 3 to 7 | 7.1604 | 1.0201 | **0.3144** | **0.06126** |
|   | CGPA | 7.1341 | 0.8949 | | |
| 4 | 4 to 7 | 7.4893 | 1.0277 | 4.25 | <.0001 |
|   | CGPA | 7.1341 | 0.8949 | | |
| 5 | 5 to 7 | 7.4735 | 1.0057 | 4.06 | <.001 |
|   | CGPA | 7.1341 | 0.8949 | | |
| 6 | 6 to 7 | 7.5011 | 0.9789 | 4.39 | <.001 |
|   | CGPA | 7.1341 | 0.8949 | | |

The preceding table shows the following :

(a) The P-value is very much less than the considered level of significance .01. Hence the first null hypothesis is rejected indicating that there is a significant difference between (i) the average academic performance of Semester 1 to Semester 7 and (ii) the final CGPA by semesters of the total sample of students. The final CGPA is less than the average academic performance of Semester 1 to Semester 7.

(b) The P-value is greater than the LoS .01 Hence the second null hypothesis is accepted. i.e There is no significant difference between (i) the average academic performance of Semester 2 to Semester 7 and (ii) the final CGPA by semesters of the total sample of students.

(c) In this case also, the P-value is greater than the considered level of significance .01 Hence the third null hypothesis is accepted. It may be inferred that there is no significant difference between (i) the average academic performance of Semester 3 to Semester 7 and (ii) the final CGPA by semesters of the total sample of students.

(d) The P values corresponding to the last three cases being less than the LoS, the fourth, fifth and sixth null hypothesis are rejected. This implies that there is a significant difference between (i) the average academic performance of students in Semester 4 to Semester 7, Semester 5 to Semester 7 & Semester 6 to Semester 7 and (ii) the final CGPA by semesters of the total sample of students. Further, the final CGPA is less than the average academic performance of Semester 4 to Semester 7, Semester 5 to Semester 7 & Semester 6 to Semester 7 respectively.

## CONCLUSION

1. When students enter the university from a junior college in their first year of engineering, they are new to the educational system and its requirements. They perhaps need time to adjust to a new system. Hence, the inclusion of first year performance shows no consistency with the final CGPA.

2. There is a consistency in average performance of students from Semester 2 to 7 and 3 to 7 with the final CGPA by semesters of the total sample of students.

3. If average performance of semesters 2 to 7 or semesters 3 to 7 is taken into account, it shows no significant difference with the final CGPA. Therefore, if final year examination is not conducted, then the university can declare results on the basis of consistency in the average performance of either semester 2 to 7 or 3 to 7.

4. If average of other semesters, namely, semesters 1 to 7, 4 to 7, 5 to 7 and 6 to 7 is taken into consideration, then it is seen that there is no consistency with the final CGPA of the total sample of students.

5. It implies that consistency matters in average performance of students over semesters 2 to 7 or 3 to 7 vis-à-vis final CGPA.

A similar comparison of students' CGPA and Average AAP over semesters were made individually for Computers, Information Technology, Electronics & Communication Technology and Electronics subjects using the t-test. It was found that the consistently the same results were obtained in all the four subjects. Similar analysis could also be done for other subjects, programmes or disciplines.

## REFERENCES

https://www.livemint.com/news/india/covid-19-maharashtras-tally-up-at-1-10-744-cases-sero-survey-shows-virus-spread-minimal-11592242680998.html.

Vedprakash. 2020. https://www.hindustantimes.com/analysis/an-alternate-measure-of-awarding-degrees-in-times-of-covid-opinion/story-ttx8JfldbiT75nRfkHNwPP.html

https://www.conductexam.com/blog/importance-of-examination#:~:text=The%20exam%20evaluates%20the%20student's,exam%20is%20for%20self%2Dimprovement.

https://careerandeducation.expertscolumn.com/importance-examination

https://en.unesco.org/news/exams-and-assessments-covid-19-crisis-fairness-centre

https://www.thehindu.com/news/national/other-states/college-students-unsure-of-exams-during-pandemic-finds-survey/article31467865.ece