

Crash Course in Foundational Mathematics

Subject- Applied Mathematics

1. Context

The Punjab State Board of Technical Education (PSBTE) is an autonomous statutory authority created under The Punjab State Board of Technical Education & Industrial Training 1992 Act for regulating and controlling academic standards in Institutes of Technical Education and for making admissions & conducting examinations in Polytechnics and Industrial Training Institutes located in the state of Punjab and Chandigarh. INDIA Foundation, having commitment towards improving and education and skill development, two members were included as member of Board of Studies by the PSBTE.

While having interaction with the faculties and core group members, it was realised that the students were facing issues with their Mathematical skills and concepts. Reason for such a low performance lies in the three broader areas-

1) Students background-

Most of the students come from non-mathematical Intermediate background, which require refreshing their basic concepts. Majority of the students represent socially and/or economically backward communities, and they have to work with their parents for the survival.

2) Syllabus considerations-

Faculties have to complete the syllabus which comprise of grade 11th and 12th level Mathematics in 50-55 hours which is very less. Many a times, due to unavoidable circumstances, these 50 hours get reduced to 40-45hours too.

3) Assessment process-

The assessment of the students is designed and developed from outside and hence the context and current syllabus covered end up with a gap. In some of the polytechnics the result of such assessments comes as lower as 5% only.

Under the given context, PSBTE decided to design and develop a 10 days (15 hours) Crash course for Mathematics, which will be delivered to the students immediately after their joining. For the same INDIA Foundation has been invited for facilitation along with SPMU partner.

2. Objectives

- Provide opportunity to the newcomer students to refresh their concepts and skills of Mathematics in an innovative manner.
- Equip faculties with effective teaching approaches and let them reflect on their teaching methodologies.

3. Duration of the course

- Total number of periods – 20 (18 content + 2 revisions)
- Number of hours per period – 45mins
- Total number of hours for the course – 15hrs

4. Process

- The core group discussion on the context and challenges.
- Two members of INDIA foundation designed a crash course.
- Vetting cum orientation of the core group on the developed content.
- Course finalization and orientation of faculties from public and private polytechnic institutions, although the focus was on 14 govt. polytechnics.
- Pre-test and post test assessments of the students was designed and implemented.
- The findings from the pre-test and post-test assessment includes-
 - **Students with improved scores:** 160 (82.5%)
 - **Students with declined scores:** 16 (8.2%)
 - **Students with unchanged scores:** 18 (9.3%)
- Online reflection meeting was organized with the faculties and way forward was discussed.