

## Proposal for a remedial program for academically deficient students

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Proposed by:

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### PROBLEMS:

In the recent years, it has been observed that due to the various administrative changes introduced in JEE, IIT Kanpur admits a number of students who are not yet prepared for the academic curriculum offered by the institute in one or more of the following ways:

**1. Language Problem:** Students who come from boards in which the language of Instruction is not English are most severely plagued by this problem as the only language of instruction at IIT Kanpur is English. Besides ENG 112C offered as Compulsory HSS and English Conversation Classes offered by Counselling Service, no specific measures are taken to help the students. As the language plays a major part in understanding, such students understand close to nothing in the initial lectures which leads to very weak basics for the students. The student might be better prepared in the fundamentals of the courses but lags behind due to unfamiliarity with the terminology in English.

**2. Weak Knowledge of Core Subjects:** Due to the lowering of cut-offs to fill all the seats, a considerable number of students who have low score in some subjects are admitted and such students face a lot of problems in coping up with the curriculum. For example, out of all the students who were found to be academically deficient (in AP/Termination) in Y12 batch at the end of 1<sup>st</sup> year, 78% of the students had their JEE marks below 143/408 (less than 35%) and almost 90% below 165 (less than 40%).

One thing that this data clearly shows is that those students who secure less than 40% marks in our entrance exam (JEE) are very likely to face problems possibly due to lack of proper preparation. Thus, if we accept that we are admitting these students who are not as well prepared as other students, then we should have a mechanism in place to help them in reaching up to a level where they can successfully compete with their batch-mates who may have had the advantage of better preparation.

A not so surprising observation, arising mostly because of various socio-economic factors, is that both the above problems are usually, not always though, seen together in students. Also, a large chunk of such students end up landing in AP/Warning/Termination to help them with their basics and language issues.

### Proposed Model Solution:

The proposal consists of two parts-selection criteria for selecting deficient students in the slow paced program and the academic curriculum of the program itself. Currently we have two possibilities for each of the above things and hence four different models of the program are possible.

### Selection Criteria:

We propose that a test of English, Mathematics, Physics and Computer Science be conducted in English Language to identify the students who are likely to face the above-cited problems. It is suggested that the syllabus and the corresponding cut-offs in this test be set as per the minimum proficiency requirements expected from a student in order to be able to attempt the first

year courses. A proposal along these lines was forwarded to the SUGC by the Students' Senate. The SUGC indicated that these tests have never been verified before. As a result, the Students' Welfare Cell, with permission from the Students' Senate and in association with professors from Maths, Physics and Computer Science departments organised Mock Diagnostic Tests in the three subjects for incoming Y14 students as a part of their orientation program. A good number of students, north of 750, took these tests.

Currently a few students (SUGC student nominees and senior SWC members) are in the process of establishing a strong correlation between the students who have done badly in the tests and the students who have performed poorly in their academics after their first semester based on the APEC report. If a strong correlation is established (we should know this by the mid of February), then these tests can be established as a criterion to offer optional remedial program to the students. The class size also depends on the result of the correlation.

A second selection criterion was proposed was Prof. Dheeraj Sanghi, the former Dean of Academic Affairs. In his proposal the students were selected into subject-wise remedial program (see Details of the program) based on the performance of their marks in Maths and Physics papers of JEE advanced or an overall score of JEE advanced. Currently the SWC representatives have contacted the DoAA, Dr. Neeraj Mishra and he has agreed to look into the possibility of giving us the JEE data for deficient students. This way we can establish which method gives us a higher correlation and then that method can be used to select students that would be offered the option of the remedial program.

#### **Details of the program:**

There are two proposals for the program as well. We will first go through the proposal submitted by the Students' Welfare Cell. Under that proposal, the students who take the remedial program shall go through the following scheme:

1. In 1st semester, the students will take the following courses:
  - TA 101 (9 credits)
  - CHM 101 (3 credits)
  - PE 101 (3 credits)
  - ENG XYZ1 (11 credits) – Basic English required to communicate and understand lectures. As this does not require PhD level expertise in English, this may be taken by teacher(s) from outside the institute who specialize in teaching English at very basic level. Similar arrangements have been made for COM200 in one of the past semesters.
  - Basic Mathematics (till mid-semester exams, to develop familiarity with English terminology relevant to Mathematics)
  - Basic Physics (till mid-semester exams, to develop familiarity with English terminology relevant to Physics)
  - Initial lectures of MTH 101 (from mid-sem till end of semester)
  - Initial lectures of PHY 102 (from mid-sem till end of semester)
2. In 2nd semester, the students will take the following courses:
  - ENG XYZ2 (11 credits) – Slightly higher level English – Grammar, attempting answers in English etc. As for ENG XYZ1, this may also be taken by teacher(s) from outside the institute.
  - PE 102 (3 credits)
  - LIF 101 (6 credits)
  - CHM 102 (8 credits)
  - PHY 101 (3 credits)

- MTH 101 (Remaining Lectures)
  - PHY 102 (Remaining Lectures)
3. In Summers, the students will take the following courses, if they are offered:
    - MTH 102 (11 credits)
    - PHY103/ESC101
 In case these courses are not offered in the summer term, the students can take any two courses ahead of their template (Electives, HSS or ESOs).
  4. In 3rd semester, the students will take any one of PHY 103<sup>1</sup> /ESC101

**Other details and salient features:**

1. The intake in this remedial program would be around 60-70 students as almost these many students come under AP/Termination after their 1<sup>st</sup> year.
2. The students under remedial program shall not be subject to APEC rules at the end of 1st semester. From 2nd semester onwards, they shall be subject to APEC rules like the students regular program.
3. The maximum residency may be increased by 2 semesters for the students going through remedial program.
4. The evaluation for the 2 courses- MTH 101 and PHY 102- shall be spread across the first 2 semesters and a single grade shall be awarded based the cumulative performance.
5. ENG XYZ1 and ENG XYZ2 shall serve as the substitute for the 2 HSS Level 1 courses. This will also create an empty slot in 3rd or 4th semester for the remedial program students. Thus after the end of summers, any student of remedial program will be at par with student under normal programme in terms of the number of credits earned/offered.

A second proposal had been suggested by Prof. Sanghi. The idea was to have essentially slow paced programs in Maths, Physics and English separately. The student will take the slow paced program in all subjects in which he is deficient. However, the more important difference in proposal was that there would be no change in the course content of Maths and Physics (which is an essential part of the previous program), only the contact hours would increase. For example a student doing MTH101 in a normal paced program has three classes and one tutorial per week. The idea in this proposal is to cover the same amount of syllabus but in four classes and one tutorial per week. While the entire idea of the remedial program is in its early stages and the final version could either be the first, second or any intermediate version, yet the Students' Welfare Cell had a meeting over the proposal submitted by Sanghi sir and we are of the opinion that merely increasing the contact hours will not truly help the deficient students because they tend to show no understanding of far fundamental concepts. This opinion was also seconded by the present DoAA, Dr. Neeraj Mishra. The UGSAC is requested to discuss all possibilities and come some inputs to help the SWC.

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<sup>1</sup> This is likely to cause a problem for students in BS Physics program as PHY 103 is a pre-requisite for PHY 224. However, PHY 224 can be done by these students in 5th semester and otherwise also, it has been observed that due to the backlogs, many academically deficient students are not able to take this course in 3rd semester.