

Integrated Attendance Policies (Revised version)

S. Arun-Kumar

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1 Introduction

It is usually a very unpleasant task to introduce an attendance policy for courses in IIT and especially for elective courses, where we would like to believe that students register for these courses because of their interest in the subject. However, the facts seem to indicate otherwise. Students often take the least troublesome elective in order to get away with a minimum amount of work for the maximum benefit. The reasoning for taking an elective often depends upon

1. how “cool” the course is, content-wise, coverage-wise.
2. how “cool” the instructor is, grading-wise, teaching-wise and coverage-wise.
3. feedback from seniors on the “coolth” of the course.

But seldom it appears, that the subject matter of the course ever features in the decision-making process.

In such a scenario the normal mob behaviour as far as attending classes is concerned the maximum regularity in attending classes happens before the I minor exam, tapers off to sporadicity between the two minors and in many cases is characterised by complete absence in the last third of the semester. We may call this statistical pattern *attendance behaviour*. The Senate in its wisdom (or lack of it thereof) seeks to correct this behaviour by making it compulsory to have some attendance policy which either rewards or punishes this behaviour.

2 Attendance Policies

While ignoring most of the attendance policies followed in the past, we would like to formulate an attendance policy which either rewards or punishes on a more or less continuous basis in keeping with the continuous evaluation policy of the Institute. Secondly it is meant to correct the attendance behaviour witnessed in almost all courses. For the purpose of understanding the policies proposed, we require the following notation.

- $i \in \{1, 2, 3\}$ represents the three logical time-spans into which a semester is divided. We reserve the index variable i to denote an arbitrary time-span.
- Let $C_i = L_i + T_i + P_i$ be the total number of classes held in the course in the time-span i which each student in the course is expected to attend.
- Let l_i , t_i and p_i denote respectively the number of lectures, tutorials and practicals a student participated in during the time-span i .
- Let $0 \leq \pi_i \leq 1$ denote a measure called the *presence* of a student during the time-span i . π_i is then a function of L_i , T_i , P_i , l_i , t_i and p_i . $\pi_i = \frac{l_i + t_i + p_i}{L_i + T_i + P_i}$ is perhaps the simplest measure. But a more complex formula involving different weights for different kinds of contact is also possible. Then $\alpha_i = 1 - \pi_i$ is the measure of the student's *absence* during time-span i .
- Let M_i be the marks allotted to the exam marking the end of time-span i .
- Let m_i denote the marks obtained by the student out of the allotted M_i in the exam at the end of time-span i . Usually $0 \leq m_i \leq M_i$, but because of bonuses or discovery of unfair means etc. both $m_i < 0$ and $m_i > M_i$ are possible. Let $d_i = M_i - m_i$. However d_i is not guaranteed to be non-negative.
- Let μ_i be the marks actually awarded to the student for the time-span i based on m_i and his/her attendance behaviour during time-span i .
- Let w_i be the fractional weightage of marks associated with attendance for the time-span i . Usually w_i may be chosen to lie between 0.05 and 0.1.

In an attempt to make attendance policy as continuous as possible in a necessarily discrete setting, we have evolved the following assessment policies which integrate attendance into the awarded marks scheme.

The Additive Attendance Policy. This is a simple incentive policy which encourages people to come to the lecture (and sleep in it). Here for the time-span i the student is awarded

$$\mu_i = m_i + \pi_i * M_i * w_i \quad (1)$$

The Proportional Additive Attendance Policy. This policy is similar to the additive one, except that it tries to discourage sleeping in class by making the incentive proportional to the marks obtained. The student is awarded marks determined by the following expression.

$$\mu_i = m_i + \pi_i * m_i * w_i \quad (2)$$

This policy implicitly assumes that a student’s performance is directly related to how awake (s)he was in the class during the time-span i . While this may not be true in text-book based courses, it often is in courses where the lectures and tutorials form the bulk of the student’s study and revision material.

The Subtractive Attendance Policy. This is a disincentive-based policy and the equation below is self-explanatory.

$$\mu_i = m_i - \alpha_i * M_i * w_i \quad (3)$$

As a dual to equation (1) a student might be penalised for his/her absence during the time-span i .

The Proportional Subtractive Attendance Policy. While equation (3) acts as a dual to equation (1), a corresponding dual to equation (2) could be

$$\mu_i = m_i - \alpha_i * d_i * w_i \quad (4)$$

However since d_i is not always guaranteed to be non-negative, it is not clear that it would really act as a penalty proportional to the absence in classes. A simple, rational and sensible dual policy eludes me at the moment.

The Multiplicative Attendance Policy. This policy decides to circumscribe a student’s performance entirely by his presence in class.

$$\mu_i = \pi_i * m_i \quad (5)$$

In the extreme case where a student has thoroughly mastered the subject without attending a single lecture, tutorial or practical, (s)he is awarded a 0. This scheme fails to distinguish between a student who knows the subject and has not attended any classes from one who knows nothing of the subject even if (s)he has attended all the classes.

3 Experimental Results

We decided to try out the Proportional additive policy (2) with $w_i = 0.1$ in three courses. But it was implemented as an afterthought in I semester courses 2011-12-I-ilfp and 2011-12-I-lcs. However it was announced beforehand in the second-semester for 2011-12-II-toc.

The following plot shows that incentives notwithstanding, the temptation to “bunk” because

- *Yaar, bahut boring hai yaar!*
- *Yaar, bahut neend aati hai!*
- *Kucch nahin samajh mein aa raha hai, yaar!*

- *Kal quiz hai na. Kal se attend karna padega.*

is rather strong in the current generation. It is curious that nobody ever told me “The course is simply too cool. So we don’t feel the need to attend classes regularly”. If that had happened, I would have to admit that I was getting rather mellow in my old age.

