Proceedings of the 14th ISME International Conference
on Mechanical Engineering in Knowledge Age,
December 12-14, 2005
at Delhi College of Engineering, Delhi-110042 INDIA.

AN IMPROVED NETWORK APPROACH TO THE ACADEMIC MANAGEMENT OF AN ENGINEERING COLLEGE

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ABSTRACT

All the academic activities of an engineering college have been worked out in detail. Whole lot of academic activities has been divided in two categories. First category, contains those activities which have time constraints to be more stringent. Second category, contains those activities which have time constraints to be comparatively less stringent. These categories of activities have been optimally placed on the network with the objectives of the perfect management, efficient use of human resources and provide the best quality of education. This strategy has been field tested for the academic year 2004-05 for B.Tech course at Delhi College of Engineering. It has been experienced that this strategy has resulted in smoother management.

INTRODUCTION

In [1] the academic management of an engineering college has been considered as a project. The activity chart and network graph for the same have been developed. It has proved to be very useful tool in academic management of an engineering college. In [2] the pre-session and post-session activities have been defined and identified. These have been appropriately placed on in the network graph. This approach has been found effective for accomplishing the activities in time. In the present paper the whole lot of academic activities has been categorized in two categories. First category contains those activities which have time constraint to be more stringent. Second category, contains those activities which have time constraints to be comparatively less stringent. All the academic activities falling under both the categories have been drawn on the same network graph with a distinction.

NETWORK APPROACH

The network approach is a technique for planning, scheduling and monitoring of the various activities of a project. The technique helps in identifying and minimizing the trouble spots, delays and interruptions by determining critical factors and coordinating various parts of any project [3]. A few important terms of the reference related to network approach are given here.

A **project** is defined as a set of interrelated activities which must be performed in certain order for its completion.

A **network** is the graphical representation of logically and sequentially connected arrows and nodes representing activities and events of the project [3].

An activity represents some action and is a time consuming effort necessary to complete a particular part of the overall project. Therefore, each activity has its own **start time** and **finish time.** It is represented by an arrow in the network graph [Fig.1]. The beginning and end points of an activity are

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called **events** or **nodes.** It is a point in the time domain and doesn't consume any time and resources. It is represented by a numbered circle. The **head event** called the jth event has always a number higher than the **tail event** called ith event [Fig. 1].
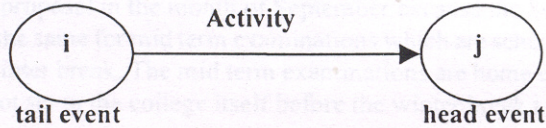

Fig. 1: Activity and Event

The activities which neither consume time nor resources but are used simply to represent a connection between the events are known as dummy activities [Fig.2].
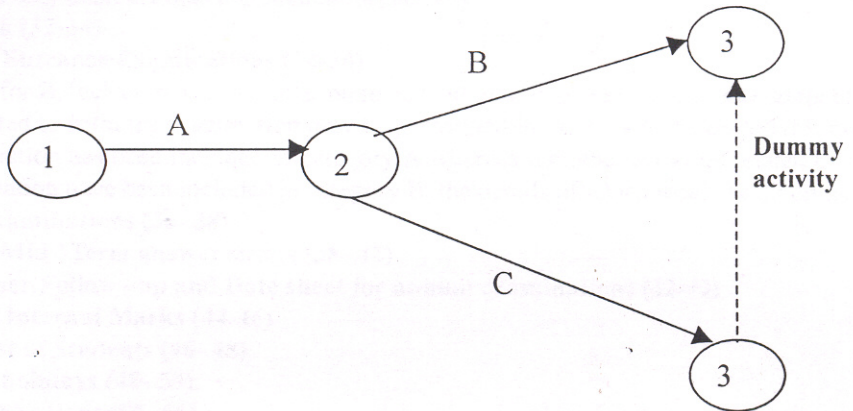

Fig. 2: Dummy Activity

ACADEMIC ACTIVITIES

The whole lot of academic activities has been divided in two categories.

    A)   The activities having stringent time constraints.

    B)   The activities having less stringent time constraints.

    The category A activities have been drawn on the network graph in the central line with bold arrows and bold circles. The circles on the graph represent the events which are points in the time frame. The numbering of events has been done using Fulkerson's rule [4]. The network graph has been depicted in Fig. 3. The pre-session and post-session activities [2] have also been taken into account and placed appropriately on the network graph.

    The node numbering has been done by skipping the odd numbers. This has been done to introduce more nodes at a future time if need arises.

CATEGORY A ACTIVITIES

Following are the category A activities:

1.   **Major Appointments (2-4)**

    This activity stands for conducting a meeting of all the faculty members and distributing the responsibilities related to whole of the academic year.

2.   **Registration (4-12)**

This activity is accomplished by getting a registration form filled up for all the present students of the course. This form indicates the papers for which they wish to appear in the final examination.

3. **Proposal for Superintendent of Exam to DU (12 – 16)**
   In this activity the names of superintendent and coordinator for theory and practical exams is proposed by the Principal of the college and sent to Delhi University. In turn the University issues the appointment letter. Of course, the examinations are to be conducted in April-May, yet it is necessary to make the proposal in the month of September because the Superintendent and deputy Superintendent are the same for mid term examinations which are scheduled in the month of January soon after the winter break. The mid term examinations are home examinations. The question papers are to be got set in the college itself before the winter break i.e. in the month of November.

4. **Mid-Term Question paper settings (16-32)**
   This activity involves issuing of the notices to faculty members for submission of question papers, and getting the multiple copies of the question papers. Further, the full preparations for mid-term examinations e.g. arranging stationary, making seating arrangements and preparation of invigilation duty chart are also included in this activity.

5. **Winter-Break (32-34)**

6. **Proposal for Entrance Examinations (34-36)**
   The proposal for B.Tech entrance examination to be held in May is made at this time so that the activities related to entrance examination may be performed in time. Only the proposal for entrance examination has been included in category A whereas the other activities related to entrance examination have been included in category B, the details of which would be given later.

7. **Mid Term Examinations (36- 38)**

8. **Valuation of Mid –Term answer sheets (38- 42)**

9. **Question Paper Follow –up and Date sheet for annual examinations (42-44)**

10. **Collection of Internal Marks (44-46)**

11. **Detention List of Students (46- 48)**

12. **Preparatory holidays (48- 50)**

13. **Theory Examinations (50- 66)**

14. **Dispatch of Internal Marks to Delhi University (66- 68)**

15. **Practical Examinations (68- 70)**

16. **Proposal for Guest Faculty for the next Academic Year (70-72)**

17. **Summer Vacation (72- 74)**

Category B Activities

These activities are also necessary activities, however , the time constraints on these activities are less stringent. These have been shown away from the central line. This helps in human resources allocation for various activities. Various activities have been listed below.

1. **Issue of Identity Cards (2 – 6)**
   This activity involves the office staff, one faculty member and the newly admitted students. On the network graph the finish time of this activity has been shown as first week of September. This activity can be finished much earlier, however, even if this activity takes a little longer time, the other activities wouldn't be affected at all.

2. **Precourses Committee (2- 8)**
   The examiners for the annual examination are appointed by the University. There are about 200

examiners to be appointed. Under this activity we prepare a draft for the courses committee meetings.
3. **DTC Bus Passes (4- 10)**
4. **Enrollment (12 – 14)**
   The newly admitted students are to be enrolled with the University. For this enrollment forms are to be filled up by the students and the enrollment fee to be deposited.
5. **Examination Forms for Annual Examination (16 – 18)**
   The start time for this activity has been shown on the network graph as first week of October, however, this activity starts with the declaration of the result of the previous session.
6. **Fee Deposit (18- 20)**
   This includes the tuition fee as well as the examination fee for the students.
7. **Cheque Preparation for Delhi University (20- 22)**
   A consolidated cheque for examination fee is to be prepared and sent to Delhi University alongwith the examination forms.
8. **Dispatch of Examination Forms for Delhi University (22- 24)**
9. **Collection of Admit Cards for Delhi University (24- 26)**
10. **Distribution of Admit Cards to Students (26- 28)**
11. **Distribution of Date Sheet for Practical Examination (28- 30)**
    The activities shown in line from node 38-40-52-54-56-58-60-62 in the network graph relate to admission process.
12. **Brochure Preparation and Advertisement (38- 40)**
13. **Sale of Admission Forms (40- 52)**
14. **Scrutiny of Admission Forms (52- 54)**
15. **Dispatch of Admit Cards for Entrance Examination (54- 56)**
16. **Entrance Examination and the Result Declaration (56- 58)**
17. **Counselling for admission (58- 60)**
18. **List of Admitted Students to Delhi University for Approval (60- 62)**
    College conducts the admission activities on behalf Delhi University. The admission to students is approved by Delhi University in a meeting of Committee known as Technological Courses Admission Committee (TCAC) as depicted on the network graph.
19. **Time Table and Room Allotment For Classes for the Next Session (50- 64)**
    This activity is normally performed during vacation period in all most all the colleges. But, this policy has an inherent deficiency. The faculty members are not available during vacation. This results in loss of teaching for some classes and the discipline in the college. Therefore, it is suggested to perform this activity in the previous session.

CONCLUSION

Following are the definite contributions of this research work.
1. Due to taking care of pre-session activities in the previous year, good start of the new session could be feasible.
2. Examinations could be conducted in time.
3. Due to categorization of activities the human resource planning was much easier.
4. The assigning of academic activities amongst various faculty members was done equitably.
5. The controlling and monitoring of academic schedule was more effective.

ACKNOWLEDGEMENT

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