

## Recommendations for a Formal Procedure for Selection of Students for "Excellence in Ph.D. Research" Award

The Director, IIT Bombay had appointed a committee through the office order D.III/C-5/2010 dated August 30, 2010 to suggest a formal procedure for the selection of students for the "Excellence in Ph.D. Research Award" The committee consists of:

Prof. S.L. Bapat, Head ME  
Prof. Y.M. Desai, Head CE  
Prof. Nand Kishore, Head Chemistry  
Prof. P.M. Mujumdar, Head AE  
Prof. M.K. Srinivasan, Head Mathematics and  
Prof. D.K. Sharma, Head EE, (Convener)

The committee obtained feedback from departments and inter departmental centres on this topic. Based on extensive discussions on various aspects of the selection process for this award, the committee makes the following recommendations:

### 1 Period of Eligibility

All theses defended in a two year period preceding the cut off date of June 30 should be considered for the award every year.

Many publications associated with the research work are submitted towards the end of the Ph.D. work. The journal review process can be very long and it may often take as long as a year for a submitted paper to be finally accepted. In view of this, it is fair to give a two year eligibility period for consideration for this award. The cut off date of June 30 gives sufficient time for evaluation of theses before the convocation.

Of course, once a thesis has been picked for receiving this award, it will not be considered in the following year.

### 2 Number of Awards

The number of awards in any given year should be proportionately divided between the academic units of the institute. A suggested method for arriving at the number of awards to be given from a particular academic unit is as follows:

Suppose the number of theses defended in the whole institute over the last two years preceding June 30 is  $N_{inst}$ , and the number of awards which can be given that year is  $Aw$ . The ratio  $R$  is defined by calculating  $\frac{N_{inst}}{Aw}$  and taking its ceiling function (rounding it off to the next higher integer). There is thus one award for (approximately)  $R$  theses defended. Now suppose  $N_{dep}$  theses have been defended during the qualifying period in a particular department. Then the number of awards allotted to the department ( $A_{dep}$ ) will be

$$A_{dep} = (int) \left( \frac{N_{dep}}{R} \right)$$

The int function above takes just the integral part of the fraction (floor function). Use of the ceiling function for  $R$  and the floor function for  $A_{dep}$  implies that there will be a few awards left over after all departments have been accounted for. This number will, however, fluctuate over the years. It is suggested that all academic units where the number of awards becomes 0 because of the floor function, should be agglomerated into one virtual unit. A committee appointed by Dean (AP) should consider the scores of all students from these units and give the remaining awards based on the metric computed for them. It is to be noticed that a few awards may need to be added/subtracted every year to keep a reasonable number of awards for this group of students.

### 3 Selection Process

The committee deliberated on the contributing factors that should be taken into account while selecting students for this award. It was agreed that we should combine the feed back received from the following four sources to arrive at a metric for selection of candidates:

1. views of the external referees for the thesis,
2. opinion of the chairman and examiners at the thesis defence,
3. continuing assessment by the members of the Research Progress Committee, and
4. departmental feedback, publication record, recognition and awards received etc.

Obviously, publication record will also influence the feedback from external referees and RPC. Thus, it will receive the enhanced weightage that should indeed be accorded to it. Apart from these criteria, the following can be used to resolve ties:

1. contribution to research activity in the group/department,
2. mentorship to peers and juniors, and
3. number of courses attended and grades obtained.



### 3.1 Process for Obtaining Feedback

As a practical aid to implement the above, it is recommended that the evaluation forms used by external referees, as well as the forms used for evaluation of pre-synopsis and progress seminars be modified. These forms should ask the evaluator whether the research work is worthy of the excellence in Ph.D. research award. The evaluators should be required to pick one of the following options: "Strongly Agree", "Agree", "No opinion" or "Disagree". In addition, space should be provided for writing a few sentences justifying the choice. The referee may be given a reference point to exclusiveness of these awards by specifying the rough number of theses considered and awards given in the previous year.

It is suggested that a metric be calculated for each defended thesis as follows:

1. Responses from the two thesis referees will constitute 25% of the metric. A "strongly agree" from a referee will get 12 points, an "agree" will get 8 points, "no opinion" will get 4 points and a "disagree" response will get 0 points. One bonus point will be given if *both* referees give either a "strongly agree" or "agree" opinion. Thus, for example, if one referee gives an "agree" option, while the other gives a "strongly agree" option, the student will receive  $8 + 12 + 1 = 21$  points.

In case a third report is received before the defence, the best two should be considered for direct referee evaluation. However, the third report should be sent to the defence committee and they may take the comments in all the reports into account while giving their evaluation as described below.

2. A combined evaluation from the examiners at the time of defence, (inclusive of chairman, external and internal examiners and supervisor) will constitute 25% of the metric. The form to be filled at the end of the defense will contain the same options as those filled by thesis referees. Weightage for "strongly agree" will be 25 points, for "agree" will be 16 points, "no opinion" will be "8 points" and "disagree" will be 0 points.
3. Continuing assessment by the department through pre-synopsis and annual progress seminars will constitute 25% of the metric. The department will decide the weightages for these evaluations and compute total points out of 25 accordingly. These weightages should be decided and made public before actual assessments are carried out.
4. Publication record, awards won by papers in conferences etc. will constitute the final 25% of the metric. Academic units will assign marks out of 25 to assess the quality and impact of the research work carried out by the student. Departments can include additional criteria in their evaluation of students, if they so desire. The criteria to be used for assessment should be decided and made public before the assessments are carried out. All papers submitted before the defence and accepted upto the evaluation date should be considered for evaluating this metric.

The total of these four scores will constitute the final metric for the award.

## 4 Nomination by Academic Units

Academic units should be notified of the number of awards to be given that year by the academic office immediately after June 30. All academic units where the number of defended theses is small and the proportionate number of awards comes to zero will be merged into a virtual single unit. Dean (AP) will appoint a committee for deciding the awards from this virtual academic unit. Academic units (inclusive of the virtual unit) should calculate the metric as described above for all qualifying students and select the students for the award accordingly. A one or two page nomination document should be solicited from the supervisor or any RPC member of the selected students. A list of students selected for the awards, along with their nomination document should be conveyed to Dean (AP). A collation of these nomination documents for the selected awardees will make a nice report on the best Ph D research from the institute. Nominations from academic units should reach well before the senate meeting which ratifies the award of degrees for the convocation.

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