Department of Biochemical Engineering and Biotechnology  
Faculty Board Meeting (02/2017-18)  
Oct 24, 2017

The 2nd Departmental Faculty Board Meeting of 2017-18 was held on 6th October 2017 at 3:00 pm in the Departmental Committee Room (I-230). The following members were present:

1. Prof. Atul Narang Chairman  
2. Prof. A.K. Srivastava Member  
3. Prof. Prashant Mishra Member  
4. Prof. D. Sundar Member  
5. Prof. Shilpi Sharma Member  
6. Prof. Ritu Kulshrestha Member  
7. Prof. Preeti Srivastava Member  
8. Prof. Ravikrishnan Elangovan Member  
9. Prof. G. P. Agarwal Special Invitee  
10. Prof. V. S. Bisaria Special Invitee  
11. Prof. M. N. Gupta Special Invitee  
12. Prof. Ashish Misra Convener

**Item No. 1. Confirmation of minutes of 1st DFB meeting (2017-18)**

The minutes of the 1st DFB meeting (2017-18) were confirmed as circulated.

**Item No. 2. Matters arising from the above meeting**

*Item No. 2. Matters arising from the above meeting*

*The HOD informed the board about the handover of the keys from Prof. Prashant Mishra to Profs. Ashish Misra and Ravi Elangovan for I-206B and I-337 respectively.*

*The HOD shared an email from Prof. Shilpi Sharma with 3 concerns about the previous minutes (Annexure 1). Prof. Shilpi Sharma agreed that concerns 2 & 3 had been resolved. For concern 1, the HOD informed that equipment worth INR 10-12 lakhs had been allotted to each faculty moving to new labs.*

*Item No. 5. New billing procedures (Forms C and NC to be done by Storekeeper)*
The HOD updated the DFB on the retirement of Mr. Inderjeet Singh as Storekeeper on 10th October 2017. The HOD informed the DFB that Mr. Mukesh Pal would serve in his place.

Item No. 6. External reviews (Identify committee for external reviews)

The HOD updated the DFB about sending out of the report to the DD (S&P) for the external review of the department (Annexure 2).

Item No. 3. Courses for Semester II, 2017-18

Prof. Shilpi Sharma (departmental Time Table faculty incharge) shared the list of courses floated in Semester II, 2016-17 (Annexure 3). The DFB recommended the same courses be floated with the following caveats

1. BBQ 302/303 to be taken up on a rotating basis between faculty. For now, BBQ 302/303 to be floated in the HOD’s name initially and reassigned to specific faculty after student load for each course in Semester II, 2017-18 was clear.
2. The 4 DE courses be floated in 3 different time slots
3. Course coordinator for BBL341 (Environmental Biotechnology) be agreed upon by discussion between Profs. Shilpi Sharma, Z.A. Shaikh, and HOD.
4. Assigning the BTP and MTP courses in the names of current coordinators.

[Action: Prof. SS, ZAS]

Item No. 4. Credit change of elective courses

The board recommended constituting a committee of the following members - Profs. T.R. Sreekrishnan, D. Sundar, and Shilpi Sharma for reviewing the changes in elective courses proposed previously in Item No. 5 of Faculty Faculty Board Meeting (09/2016-17). All course coordinators of existing and new courses were asked to present their templates in revised form to the committee members by November 3, 2017.

[Action 1: Profs. SS, AKS, SM, PM, RE, PS to send revised templates to Prof. TRS or DS]
[Action 2: Profs. TRS, DS, SS to consider new course templates]

Item No. 5. Credits for non-core internships

Prof. Ravi Elangovan updated the board on the consideration of non-core internships for design units as discussed in the Students Affairs Council (Annexure 4). The DFB noted its lack of expertise in judging non-core internships for design credits. The DFB recommended that the departmental NGU committee forward the consideration of non-
core internships for design units to the institute-level interdisciplinary committee for evaluation

**Item No. 6. Offering instrumentation lab equipment to CRF**

The HOD showed the board the policy document of the CRF for sharing instrument facilities, and proposed sharing of instruments in the departmental instrumentation lab with the CRF to generate revenue for maintaining the equipment. The HOD also appraised the board that the current waiting time for almost all the equipment was less than a day for departmental use making the CRF sharing a viable proposition. The DFB agreed with the suggestion and proposed assigning individual faculty as in-charges for various equipment to be shared in the lab.

**Item No. 7. Space allocation in 99C1**

Prof. D. Sundar shared the minutes of the Space Planning and Utilization Committee *(Annexure 5)* with the board detailing the space allocation to the department in the new building 99C1. Prof. Sundar asked the DFB members to send their suggestions by November 10, 2017, on the following points to Prof. Ravikrishnan Elangovan

1. Common facilities to be housed by the department
2. Requirements for their individual labs as indicated in the minutes

Prof. Ravikrishnan Elangovan also updated the board on discussions with other departments (KSBS and CBME) regarding common shared areas in 99C1. The DFB asked him to circulate a written document with these details to all board members. The board also recommended holding another DFB soon to discuss these points in detail.

*[Action: All faculty]*

**Item No. 8. Organization and budgeting of labs for 2nd semester**

Profs. Preeti Srivastava and Ravikrishnan Elangovan (UG teaching lab faculty incharges) updated the board on their ideas for conducting the UG labs efficiently by providing students with dedicated glassware, benches and pipettes. The board asked them to get back with detailed numbers on these based on the number of lab cycles by 15th November 2017.

*[Action: Profs. PS, RE]*

**Item No. 9. UG lab gas pipeline**

The HOD updated the board on multiple incidents of smell of leaking gas in the UG lab reported by the lab-incharge Gulshan Dass including one documented instance *(Annexure 6)*. The HOD warned the board of the safety hazards with access of the
pipeline when dealing with UG students. The board recommended closure of the gas pipeline and the use of gas lamps with low flammable material.

[Action: Prof. AN]

**Item No. 10. Host for DST-Inspire Faculty**

The HOD updated the board on the receipt of applications from multiple candidates requesting the department to act as a host for various research schemes (DST-Inspire, Wellcome Trust and reentry postdoctoral fellowships), and the lack of a departmental method for screening and responding to the application. The board recommended that a mechanism be evolved for the same for consideration in the next DFB meeting.

[Action: Prof. AN, DS]

**Item No. 11. Proposal to float various new courses**

   a. **New courses template from CSE**
      The board had no comments on this issue.

   b. **Change of L-T-P structure and number of credits by DMS**
      The board had no comments on this issue.

   c. **New courses template from HUSS**
      The board had no comments on this issue.

**Item No. 12. Feedback regarding various items discussed in BAP**

The board welcome the initiatives for the proposals.

**Item No. 13. Any other items**

None

Ashish Misra  
Convener, DFB

**Distribution**

All DBEB faculty by email

Cc: Office file
Dear Atul

Some concerns regarding the recently circulated minutes of last DFB meeting:

1. **Item No 2 - Item No 3:** From the list of equipments that are to be purchased for SBL, the two thermal cyclers have been deleted. I wish to mention that for my working group this is an equipment of utmost importance with a minimum of 3-4 cycles of PCR set on a daily basis. Currently there are 4 cyclers in Metagenomics. The only one that I will be shifting to SBL is a machine that is 8 years old, with one block non-functional, and having recovered from two major breakdowns. In such a scenario I am in urgent need for a minimum of two functional thermal cyclers. The board may kindly re-visit this decision.

2. **Item No 3:** I am the only one who will be handed over the new lab after a minimum of 5-6 months. Hence, as mentioned to you earlier, I would like to retain the lab-inchargeship of Metagenomics. Clarification (and confirmation) for the same had been sought from DDSP (trail mail dated 21st July 2017 attached). This needs to reflect in Annexure 3.

3. **Item No 10:** MTP evaluation. Kindly note that I did NOT request for moderation of "a set of final MTP evaluations" but moderation of "BED852", for which I have even received request for grade submission from Academic section. The grades for BED852 should have ideally been submitted to Academic section before BED854. Kindly modify accordingly.

Regards
Shilpi Sharma
September 12, 2017

Prof. M. Balakrishnan
DDSP

Sub: Actions taken by DBEB in response to External Review held on March 7-8, 2014.

Dear Prof. Balakrishnan,

I am writing in response to your letter dated July 6, 2017. Please find attached a report describing the actions taken by DBEB in response to the External Review (Annexure 1).

While we have made every attempt to act on the recommendations of the Committee, I would be remiss to ignore the extremely negative reaction of the Department to the report of the external committee. It was widely perceived as a hatchet job aimed at playing a game of one-upmanship rather than providing constructive criticism. As noted in our response dated July 31, 2104 (Annexure 2), the “review committee did not have a single encouraging point” and the report reads like a laundry list of complaints including wild and unsubstantiated accusations about performance without bothering to stipulate even the hint of an objective benchmark.

In this response, we have chosen to take the high ground by refraining from counterproductive mud-slinging. However, if our response is to lead to a useful dialog and outcomes, it must be reviewed but by objective, thoughtful, and apolitical scholars capable of constructive criticism. We sincerely hope that you will choose the Internal Review Committee members accordingly.

We look forward to meeting you soon.

Best regards,

Atul Narang

Encl: (1) List of actions taken in response to the report of the external committee.
(2) Response of DBEB dated July 31, 2014, to the report of the external committee.
Annexure 1: List of actions taken in response to review by the External Committee

1. Administration and organization

1.1 *DBEB and CBME to be co-located as there is considerable overlap in their equipment, and hence, sharing of the infrastructure and equipment will greatly benefit the students. The committee also felt that given the nature of (overlapping) of the two units, namely, DBEB and CBME, may consider merger of the two units. However, the third unit, SBS, while co-located, may operate separately as a unit, for teaching and carrying out research in basic biological services.*

This comment has been thoroughly addressed in the response dated July 31, 2014 (Annexure 2).

1.2 *Less intra-department as well as inter-department interaction between faculty.*

This comment has been thoroughly addressed in the response dated July 31, 2014 (Annexure 2).

1.3 *Lack of leadership. Need change in leadership.*

This comment has been thoroughly addressed in the response dated July 31, 2014 (Annexure 2).

1.4 *Lack of interaction with administration.*

- This comment has been thoroughly addressed in the response dated July 31, 2014.
- At present, there is close interaction with all members of the administration.

2. Curriculum and teaching

2.1 *Department needs to reassess their curriculum and make it current as well as pertinent to today's world. As per student feedback, a significant number of courses are being taught in a manner that has been the same for the past 2 decades. Teaching is Archive (sic).*

- We have offered the following new courses since 2014.
  - Genome Engineering
  - Cancer Biology
  - Environmental Biotechnology
- The DFB approved the following new courses to be offered subject to approval.
  - Microbial Ecology
  - Plasmid Biology
  - Biotechnology Entrepreneurship
  - Optics in the Life Sciences
- The DFB approved modification of the following existing courses (again subject to approval)
  - Combinatorial Biotechnology
  - Plant Cell Biotechnology
  - Protein Science and Engineering
  - Bionanotechnology
  - Genome Engineering
2.2 Entrepreneurship needs major encouragement among the students. Department should give some thought to the possibility of including such courses as part of their curriculum.

- Prof R. Elangovan has proposed a new course called Biotechnology Entrepreneurship.
- Its contents have been approved by the DFB and will soon be circulated to other departments.

2.3 Teaching to be made more effective and stress free. Students should be imparted soft skills training that will make them effective team workers and leaders in their profession.

- Ineffective and stressful teaching is a seemingly intractable problem faced by the entire Institute. We will implement the recommendations made by the Institute committee empowered to study this problem.
- The department has actively supported student participation in team activities such as iGEM.
  - The UG lab is available 24/7 to all iGEM participants from DBEB and other departments.
  - Faculty mentors have written DBT proposals to secure Rs 11 lakhs for iGEM.

2.4 Teaching labs needs a major update. Old equipment should be written off and new equipment and experiments need to be added to make the lab courses reflect the biotechnology of today. Hands-on experience in the labs is missing. Students do not learn much.

- We have built a new 3000 ft\(^2\) air-conditioned UG wet lab (Room I-30) equipped with:
  - 8 lab benches which accommodate 96 students.
  - Rs 72 lakhs of new equipment.
  - Biometric/CCTV system to enable 24/7 access to all UG students.
- All biological labs are now done by groups of no more than 2 students.
  - This small size ensures that all students get hands-on experience.
- By March, 2018, the Bioprocess lab (I-103) will get 4 new bioreactors through DBT-HRD funds.
  - Thereafter, no more than 4 students will operate each bioreactor.
- All lab handouts have been vetted and posted on the web.
- Four staff members have been deputed exclusively to conduct the labs.
  - Three were trained for 1 year to ensure thorough technical knowledge of every lab.
- A new write-off process has been developed to remove old equipment efficiently.
  - Every step of this process is monitored via a shared Google spreadsheet.

2.5 Basic computing infrastructure needs improvement.

- We have built a new Computer lab (Room I-231).
- By mid-October, it will be equipped with 24 new computers and a projection system
- It will be used to teach computational courses (Bioinformatics, Computational Biology).
- The lab has been equipped with a biometric system to enable 24/7 access.
  - This will give students unlimited access to proprietary and advanced software.
3. Industry participation and placement

3.1 Industry participation was minimal across the board. It is recommended that the units be asked to focus on this along with IIT administration.

- At present, 7 faculty members have industrial projects: Preeti Srivastava (IOCL, Wrig Nano), Ravikrishnan Elangovan (Valetude Prime), Zia Shaikh (GAIL, Burdwan Mills, DRDO), P. K. Roychoudhary (GAIL), G. P. Agarwal (Sugar industry), T. R. Sreekrishnan (DRDO), V. S. Bisaria (Nagarjuna Chemicals).
- This is a better record than most other departments except Civil Engineering.

3.2 Placement record very poor. Hardly any jobs in the core sector.

Almost all the students get jobs, but they have little interest in the core sector due to unattractive pay packages. Indian biotech companies pay very low salaries, and well-paying multinational biotech companies do not recruit extensively in India. To our knowledge, no IIT Biotech department has succeeded in placing large numbers of students in the core sector (see, for instance, IITM’s placement statistics at http://placement.iitm.ac.in).

4. International exposure

4.1 Faculty must be encouraged to meet their peers abroad to generate research ideas and work on joint collaborative research projects.

- All faculty members attend international conferences.
- Almost all faculty members have one or more international collaborations (too many to list).

4.2 Attempts should be made to attract foreign students and also hire post doctoral students to carry out research in advanced areas.

- This is an area in which the Institute has invested considerable effort. We will be glad to implement recommended strategies with a reasonable hope of success.
- In 2016-17, we initiated and signed MoUs with
  - Danish Technical University, Academia Sinica, University of Manchester (on-going)

5. Management of equipment

5.1 Equipment installation, maintenance, and management needs to carefully examined. High end analytical equipment should be moved to a central facility, assigned trained manpower, and should be made accessible to all faculties.

- The department has a central facility (Instrumentation lab in I-233).
- It is managed by a Senior Technical Assistant (Mukesh Anand) with >30 years of experience.
- The Instrumentation lab has been completely renovated.
- All the equipment in the lab was repaired in 2016-17 for a sum of Rs 11 lakhs.
An online booking system was started to facilitate booking of equipment and track its use.

The lab has been equipped with a biometric system for 24/7 access to all graduate students.

By 10/2017, we expect to offer all the equipment in I-233 to CRF.

In 2016-17, new equipment (1 HPLC, 1 spectrofluorimeter) worth Rs 40 lakhs was installed.

In 2017-18, new equipment (1 LC-MS, 1 flow cytometer) worth Rs 3 crores will be installed.

5.2 No AMC policy in place. Equipments down for a very long time.

- AMCs have been signed for all heavily used equipment (HPLC, GC, GC-MS).
- AMC expenses are now booked in April, thus ensuring timely payment.
- All the equipment in Instrumentation lab is fully functional.
  - HPLCs and GCs, which had a waiting time of 3 weeks, are now available on demand.

6. Procurement of chemicals and equipment

6.1 Requirement for more consumables.

- This problem was mitigated by improving management of external funds (DBT-HRD, BTIS).
- We will approach the Administration after assessing the need for additional funds.

6.2 Purchase procedures need improvement. Procurement of chemicals and equipment must be made electronic. Current system suffers from two major problems. First, a lot of time of faculty and students gets spent on purchasing. Second, the time it takes to accomplish these purchases is too long presently (3-4 months for chemicals and 6-9 months for equipment) resulting in major inefficiencies. This was the single most important issue raised during our interactions with students and faculty, and clearly the most serious one.

- We have developed a partially electronic procurement system involving no paper movement.
  - The buyer emails scanned copies of the invoice to the Storekeeper.
  - The Storekeeper does all the paperwork. Specifically, the Storekeeper
    - Prepares all the forms (C, NC) and minutes.
    - Attached original invoice to these forms and dispatches to IRD/Accounts.
  - Every step of the process is monitored on a Google shared spreadsheet.
  - The time from receipt of the invoice to dispatch rarely exceeds 2 weeks.
- A fully electronic system of procurement, developed in-house, is being beta tested.
  - This system will automatically prepare the C and NC forms.

7. Productivity of faculty

7.1 Large sections of the faculty, in particular most of the new faculty, were not performing as per expectations. The department needs to address this issue and ensure that the new faculty gets the expected support from the department resulting in their smooth transition and productive beginning. Productivity of the department (as measured by number of papers published and other metrics) is below expectation.
Both faculty members hired in 2011-14 received immediate space and equipment support.

The faculty member hired in 2015-16 was immediately given space in current Head’s lab.
  - In 2016-17, he was given extra financial support for consumables.
  - In April, 2017, he was allocated an independent 700 ft² lab.

Expenditure of all Institute funds (NPN05, PLN03 etc) has been made completely transparent.
  - All expenditures are shared with everyone via a Google shared spreadsheet.
  - This ensures that there are no flagrant inequities in allocation of funds.

8. Recruitment of PhDs

8.1 Faculty should regularly visit institutes of repute to motivate students to join the department.
  - The Institute has initiated a program to encourage NIT students to join IITD.
  - The Department participated actively in this effort.

8.2 The department needs to attract more PhD students. The number of PhD students hired in the last 5 years seems to particularly low.
  - The number of PhD students recruited per year has grown substantially.
    - Number of students recruited in 2013 and 2014 was 8 and 7, respectively.
    - Number of students recruited in 2014, 2015, and 2016 was 14, 11, and 11, respectively.
  - Total number of PhD students registered has grown from 46 in 2014 to 60 in 2017.

9. Safety

9.1 Reliable mechanism for management and disposal of radioactive waste.
  - The Radioactivity lab has been inspected and licensed by AERB.
  - Disposal is, and always has, been done in accordance with AERB procedures.

9.2 Lab safety an issue across all 3 entities.
  - Sensitive labs (UG lab, RNA-II) have been equipped with fume hoods.
  - Natural gas supply, a potential fire hazard, has been removed from the UG lab.
  - The UG and Instrumentation labs are equipped with fire alarm systems.
  - The Radioactivity lab contains all safety features mandated by AERB (shower, lead containers).

10. Space

10.1 Underutilization of space. The department seems to have a lot of space at their disposal but the space is poorly utilized due to large number of scattered laboratories and inactive equipment. Several labs need reorganization. Small silos created over the years.
  - Only three departmental labs remain to be renovated.
    - Bioprocess lab (I-103): FIST funds (Rs 43 lakhs) will be used to upgrade it by 03/2018.
    - Pilot Plant lab (I-131): Its renovation will be discussed in next DFB.
M. Tech. lab (I-321): Renovation to be assessed after looking at current status of UG lab.

- All other departmental labs have been, or are in the process of being, renovated.
  - New computer lab (I-231) will be fully functional in October, 2017.
  - Renovation of 4 additional labs (I-33, I-204/205, I-206A, I-206B) was started recently.
    - Layouts of these labs were submitted to CPWD in August, 2017.
    - These labs are expected to be renovated by March, 2018.

11. Technical staff

11.1 Technical cadre for managing laboratories and key equipment is missing. The existing non-teaching staff appeared to be suffering from a lack of training and motivation. Technical staff must be regularly trained to handle new equipment. In addition, the centre should also look at their promotion policies.

- Low morale existed because
  - Few resources were allocated to shared labs manned by experienced staff.
  - Staff were viewed primarily as proxies for maintaining inventory in faculty labs.
  - Several retirements, but no replacements, led to increased burden on remaining staff.

- In the last year, we
  - Allocated Rs 54 lakhs to repair equipment in Instrumentation & Bioprocess labs.
  - Resolved in the DFB that inventory will be only in the name of faculty members.
  - Provided staff opportunities to improve technical skills
    - Three staff members were given 1-year training to conduct UG labs.
    - One staff member was given approval to pursue PhD.
    - Four staff members were sent for technical training.
  - Hired new staff
    - One person, supported by DDF, has been hired to support electrical work.
    - Currently negotiating hiring of skilled person for Instrumentation lab.
    - Requested E-II to provide additional staff.

The above statements have been reviewed and approved by all members of DBEB’s internal committee constituted the DFB to provide this response.

Prof. D. Sundar

Prof. Shilpi Sharma

Prof. Preeti Srivastava

Prof. Zia Shaikh

Prof. Atul Narang
Composition of Expert Review Committee

Dr. Virander S. Chauhan, Chairman
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Prof. Anurag Rathore, Director’s nominee
Chemical Eng. Dept., IIT Delhi

Prof. S.K. Koul, Facilitator
Dy. Director (Strategy & Planning)

Observations and Recommendations

Observations

- Students waste lot of time in ordering and interacting with vendors.
- Basic computing infrastructure needs improvement
- No AMC policy in place. Equipments down for a very long time.
- Less Intra Department as well as Inter Department interaction between faculty.
- Lack of interaction with administration.
- Underutilization of space.
- Several laboratories need reorganization. Small Silos created over the years
- Lack of leadership in DBEB. Need change in Leadership.
- Academic performance below par
• Requirement for more consumables. Purchase procedures need improvement
• Teaching is Archive
• Younger faculty under performing
• Laboratory safety - an issue across all the three entities
• Placement record very poor- hardly any jobs in the CORE sector in the DBEB
• Hands on experience in the laboratories missing. Students do not learn much in the laboratories.

Recommendations

• DBEB-CBME to be co-located
• Productivity of the department (as measured by number of papers published and other metrics) is below expectation. Department to look into this seriously.
• Teaching to be made more effective and less stressful. Students should be imparted soft skills training that will make them effective team workers and leaders in their profession.
• Faculty must be encouraged to meet their peers abroad to generate new research ideas and work on joint collaborative research projects.
• Attempts should be made to attract foreign students and also hire post doctoral students to carry out research in advanced areas.
• Faculty should regularly visit institutes of repute to motivate students to join the Department for Ph.D.
• Technical staff must be regularly trained to handle new equipment. In addition, the centre should also look at their promotion policies.
• Ph.D Students to be given international exposure. Master level students to be encouraged to publish papers in peer reviewed journals and conferences.
• The department seems to have a lot of space at their disposal but the space is poorly utilized due to large number of scattered laboratories and of inactive equipment. Department to look into this.
• The Committee observed that large sections of the faculty, in particular most of the new faculty, were not performing as per expectations. The department needs to address this issue and ensure that the new faculty gets the expected support from the department resulting in their smooth transition and productive beginning.
• Teaching labs need a major update. Old equipment should be written off and new equipment and experiments need to be added to make the lab courses reflect the biotechnology of today.
• Entrepreneurship needs major encouragement amongst the students. Department should give some thought to the possibility of including such courses as part of their curriculum.
• The department needs to reassess their curriculum and make it current as well as pertinent to today’s world. As per student feedback, a significant number of courses are being taught in a manner that has been the same for the past 2 decades.
Preamble:

Indian Institute of Technology, Delhi is conducting internal reviews of its various Departments/Centres/Schools. The present report pertains to such a review conducted for the Department of Biochemical Engineering and Biotechnology over a period of two days (7th and 8th March, 2014) by the following:

1. Dr. Virander S. Chauhan, 2. Dr. Anupam Varma, 3. Dr. M.C. Misra, 4. Dr. K.K. Raina, and 5. Prof. Anurag Rathore

The above committee visited the Department of Biochemical Engineering and Biotechnology (DBEB), School of Biological Sciences (SBS) and Centre of Biomedical Engineering (CBME). The Committee listened to the presentations made by the respective academic unit; met with their students, non-teaching staff and faculty; and visited their laboratories and other facilities. Overall, the interactions were open and informal and the Committee felt that several issues were common to the three academic units. At the same time, there were a few issues specific to each unit.

General Observations and Issues

1. The Committee feels that the three academic units should be co-located as there is a considerable overlap in their equipment and hence, sharing of the infrastructure and equipment will greatly benefit the students. The committee also felt that given the nature of (overlapping) of the two units namely, Dept. of BE&BT and Centre of Biomedical Engineering, IIT may consider a merger of the two units. However, it was felt that the third unit, The School of Biological Science, while co-located, may operate separately as a unit, for teaching and carrying out research in basic biological services.

2. Industry participation was minimal across the board. It is recommended that the units be asked to focus on this along with IIT administration. Hiring a qualified project manager for each unit such that this person has the requisite skills (MBA-preferably) and can interface between the academic unit and the concerned industry. He/she will play an important role in initiating the thought process of attracting private funding for research through active industry participation. Other key roles of this person could be budget and IP management for the department and for key projects.

3. Entrepreneurship needs major encouragement amongst the students. The units should give some thought to the possibility of including such courses as part of their curriculum. Hiring of the above mentioned project manager is also likely to alleviate this issue.

4. Procurement of chemicals and equipment must be made electronic. Current system suffers from two major problems. First, a lot of time of faculty and students gets spent on purchasing. Second, the time it takes to accomplish these purchases is too long presently (3-4 months for
chemicals and 6-9 months for equipment) resulting in major inefficiencies. This was the single most important issue raised during our interactions with students and faculty, and clearly the most serious one.

5. Reliable supply of utilities (electricity, water etc) needs to be put in place.

6. Reliable mechanism for the management and disposal of radio-active waste needs to be put in place. This must be taken up urgently.

7. Equipment installation, maintenance, and management needs to be carefully examined. High end analytical equipment should be moved to a central facility, assigned trained manpower and should be made accessible to all faculties.

8. The Committee felt that the technical cadre for managing laboratories and key equipment is missing. The existing non-teaching staff appeared to be suffering from a lack of training and motivation.

Specific Recommendations

1. The Committee felt that the productivity of the department (as measured by number of papers published and other metrics) was below expectation.

2. The department seems to have a lot of space at their disposal but the space is poorly utilized due to large number of scattered laboratories and of inactive equipment.

3. The department needs to attract more PhD students. The number of PhD students that have been hired in the last 5 years seem to be particularly low.

4. The Committee observed that large sections of the faculty, in particular most of the new faculty, were not performing as per expectations. The department needs to address this issue and ensure that the new faculty gets the expected support from the department resulting in their smooth transition and productive beginning.

5. The department needs to reassess their curriculum and make it current as well as pertinent to today’s world. As per student feedback, a significant number of courses are being taught in a manner that has been the same for the past 2 decades.

6. Teaching labs need a major update. Old equipment should be written off and new equipment and experiments need to be added to make the lab courses reflect the biotechnology of today.
Minutes of the Policy Committee Meeting (2014-2015) held on 30th July 2014 at 12.00 noon in the Departmental Committee Room (I-230). Following members were present:

Prof. Prashant Mishra  Head, DBEB
Prof. T. R. Sreekrishnan  Member
Prof. Atul Narang  Member
Dr. Ravikrishnan Elangovan  Member
Dr. Preeti Srivastava  Member, Convenor

Discussion of the report of internal review committee

The report of the internal review committee was discussed extensively with the following feedback/comments/action plan:

We are glad to note that the committee agrees with us on all the actionable points listed in the Executive Summary of Internal Review report. Action on these items was initiated well before the Institute initiated the internal review process.

OBSERVATIONS AND RECOMMENDATIONS

Observations

- **Students waste a lot of time in ordering and interacting with vendors**

  Department has already taken proactive measures to streamline the procedure for ordering and interacting with vendors with minimal student involvement. However, it has been noted that most of the problems are associated with vendors not getting their payment in time. Many times it has been noted that well known companies (such as Sigma Chemicals, USA) have stopped supply of chemicals due to the lack of payment in time. Institute needs to look into this matter and may frame a general policy for clearing the payment and inform the same to PI/ Buyer in a time bound manner.

- **Basic computing infrastructure needs improvement**

  The policy committee is aware of the fact that the computer facilities need to be strengthened further, in all laboratories. Work has been initiated to equip every teaching and research lab. The Institute's support is sought in this respect.
• **No AMC policy in place. Equipments down for a very long time**

It is agreed that AMC is needed for all major equipments but the Institute's recurring grant has been a limiting factor. We have ensured that new equipments are procured with extended warranty period and AMC. However, due to limited funds it has not been possible to include all equipments under AMC coverage. A separate head in the budget for AMC renewal and newer AMCs is needed.

• **Less Intra Department as well as Inter Department interaction between faculty.**

The policy committee discussed this issue and wanted to know the bench mark as it is difficult to understand the committee's view point in this regard. An elaborate account of Intra- and inter departmental interactions that the faculty members have been involved in, in the form of joint projects, supervision of students, and the course taken, had been provided in the Review Document and is reiterated in the following two tables:

### Intra-departmental Interactions in terms of joint supervision of doctoral students

<table>
<thead>
<tr>
<th>Student</th>
<th>Faculty supervisor</th>
<th>Departmental co-supervisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sk. Ziauddin Ahammad</td>
<td>T.R. Sreekrishnan</td>
<td>James Gomes</td>
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<td>Kankana Kundu</td>
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<td>Shilpi Sharma</td>
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<td>Jitendra S. Verma</td>
<td>A.K. Srivastava</td>
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<td>Nivedita Patra</td>
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<td>Guneet Kaur</td>
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<td>Ashish Baldi</td>
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<td>V S Bisaria</td>
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<td>Anees Kaprakkaden</td>
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<td>Preeti Srivastava</td>
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<td>Vinod Kumar</td>
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<td>Siddhi S.</td>
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<td>Z.Ahammad</td>
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<tr>
<td>Tenzin Kenzom</td>
<td>Saroj Mishra</td>
<td>Preeti Srivastava</td>
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<td>Swati Ojha</td>
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<td>Subhash Chand</td>
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<tr>
<td>Meenu Chhabra</td>
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<tr>
<td>Mohd. Younis Rather</td>
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<td>D. Sundar</td>
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<td>Rashi Gupta</td>
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<td>Gautam Anand</td>
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<tr>
<td>Neha Nagpal</td>
<td>Ritu Kulshrestha</td>
<td>P K Roychoudhury</td>
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<tr>
<td>Khusboo Rastogi</td>
<td>R. Elangovan</td>
<td>Sunil Nath</td>
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<tr>
<td>Vidhu S</td>
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<td>Sunil Nath</td>
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### Inter-departmental Interactions in terms of joint supervision of doctoral students

<table>
<thead>
<tr>
<th>Student</th>
<th>Faculty supervisor</th>
<th>Inter Departmental co-supervisor</th>
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<tr>
<td>Vikrant Sarin</td>
<td>T. R. Sreekrishnan</td>
<td>K.K.Pant, Chemical Engg</td>
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<td>Shukla Pal</td>
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<td>S.K.Gupta, Chemical Engg</td>
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<tr>
<td>Kapil Kumar</td>
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<td>M.G.Dastidar, Energy Studies</td>
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<tr>
<td>Asheesh K. Yadav</td>
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<td>Santosh Satya, CRDT</td>
</tr>
<tr>
<td>Ashish Pathak</td>
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<td>M.G.Dastidar, Energy Studies</td>
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<td>Dinesh K Upadhyay</td>
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<tr>
<td>Isha</td>
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<td>Pushap Chawla</td>
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<td>Arpita Ghosh</td>
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<td>M.G.Dastidar, Energy Studies</td>
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<td>Naresh Mohit VS</td>
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<td>A. Mittal, KSBS</td>
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<td>Benu Monga</td>
<td>M N Gupta</td>
<td>S K Khare, Chemistry</td>
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<td>Joyeeta Mukherjee</td>
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<td>Mohd. Asif Shah</td>
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<td>Aji Alex</td>
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<td>Veena Koul, CBME</td>
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<td>Shalini G, Chemical Engg</td>
</tr>
<tr>
<td>Deepak Gola</td>
<td>S. Z. Ahammad</td>
<td>Anushree Malik, CRDT</td>
</tr>
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</table>

### Number of large interdisciplinary projects (within Department's areas, and across the institute).

<table>
<thead>
<tr>
<th>Faculty Name</th>
<th>Joint PhD student (within department)</th>
<th>Joint Project (within department)</th>
<th>Joint PhD student (outside department)</th>
<th>Joint Project (outside department /institute)</th>
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<td>Prashant Mishra</td>
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<td>Saroj Mishra</td>
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<td>Sunil Nath</td>
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<td>G. P. Agarwal</td>
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<td>Atul Narang</td>
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<td>D Sundar</td>
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<td>Shilpi Sharma</td>
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<tr>
<td>Ritu Kulshrestha</td>
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<tr>
<td>Ravikrishnan E</td>
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<tr>
<td>Preeti Srivastava</td>
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<td>1</td>
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<tr>
<td>S. Z. Ahammad</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>1</td>
</tr>
</tbody>
</table>

25
• **Lack of interaction with administration.**

The policy committee is not clear as to what is implied by this observation. We would like to state that the departmental faculty members are involved in various levels of Institute's administration in the capacity of important positions such as Dean IRD, Associate Dean (UGS), Associate Dean (Student Affairs), Professor-in-charge Library, National Coordinator of INDEST-AICTE Consortia, Chairman Registration and Grades (UG), Chairman Registration and Grades (PG), Vice-Chairman (JEE), House Masters and Hostel Warden. In fact, considering the total faculty strength, we have one of the highest level of involvement in the administration.

• **Underutilization of space.**

The policy committee disagrees with this observation. The department conducts large number of wet lab courses every semester. Besides, it is noteworthy to mention that the infrastructure, which was initially created for an intake of approx. 25 students, is now being used to accommodate 60 students. There is absolutely no "unused space" in the department. In fact the department is facing massive space crunch with the increased number of UG students. Due to specialized nature of our teaching program more newer labs need to be developed and equipped. The department is renovating the existing space primarily to reclaim more working space for additional students and newer laboratories. Also due to safety requirement some empty space is mandatory surrounding the high pressure vessels.

• **Several laboratories need reorganization. Small Silos created over the years.**

One of the reasons for creating smaller labs was because different faculty members are working on different biological systems such as bacteria, fungi, plants and animals. To avoid contamination, each biological system requires a separate lab. Also, AC space was restricted to those areas where climate control was absolutely essential. Most of our labs are being shared by faculty members working in the same area.

• **Lack of leadership in DBEB. Need change in Leadership.**

The basis of this comment was not clear to the policy committee. An elaborate mention is needed to respond to this issue. In fact, during the interaction of the Department’s faculty with the Internal Review Committee members, it was specifically pointed out by the faculty that the current leadership of the Department is extremely helpful as well as pro-active in facilitating all Departmental activities. It is really surprising to note that the Committee has come up with a comment totally negating that.

• **Academic performance below par**

The Review committee has not mentioned about the bench-mark used to arrive at this comment. In the absence of a comparison of the DBEB faculty’s academic performance (quantitative data
in terms of publications, projects, teaching and other research outputs) with that of other Departments/Centres/Schools of IIT Delhi as well as Biochemical Engineering/Biotechnology Departments of other IITs/reputed national and international Universities, this statement is meaningless.

- **Requirement for more consumables. Purchase procedures need improvement**

The policy committee strongly agrees to the point raised by the internal review committee. The department is under pressing need for recurring grants. This is despite the fact that all faculty members actively bring funds through extramural projects, with budgets much higher than the Institute's contribution to the recurring head. Budget allocation to the department should not be based on a formula which takes into account only the number of students registered, thereby resulting in departments like humanities, and social science (with no requirements of lab consumables) being allocated more than departments such as ours with a large wet lab component. Also, almost all the Major Projects are experiment-based. Most of the chemicals and consumables used in these laboratory exercises are very expensive and consume the whole of the Non-Plan grant allocated. We barely make ends meet by chipping in from sponsored project funds and a teaching program grant (HRD Grant) from Department of Biotechnology, Govt. of India.

- **Teaching is Archive.**

The policy committee presumes the internal review committee meant "Archaic". Almost half of the faculty strength in the department is just a decade past award of its PhD degree, and so the question of archaic teaching does not arise. It is true that content of some courses is decades old. But the review committee will probably agree that just like in other departments, some fundamental part of course (mostly covered in Core courses) needs to be covered before moving on to more specialized and modern topics. In fact students of DBEB need to understand basic concepts of Chemical Engineering, Biochemical Engineering and Biology before learning new advanced courses.

In its constant drive to maintain its standard, the entire curriculum of the department has been recently revised to keep pace with the changing scenario and to bring in newer topics, together with deleting old ones. Besides, newer electives have also been proposed in the curriculum review held recently.

- **Younger faculty under performing.**

It is strange to note that without giving any benchmark such comment has been made. The faculty presumes that this is arising out of an unsubstantiated statement made by Prof. Anurag Rathore of Chemical Engineering Department, IIT Delhi, who was the internal member in the Committee. This statement by Prof. Rathore was challenged by the then Head, DBEB, right in front of all the Committee members and was also conveyed to the concerned authorities. As a
faculty member from another Department of IIT Delhi, such statements are uncalled for and when they are unsubstantiated with data, needs to be tagged as ‘malicious’. We have recently submitted the achievement of younger faculty to the Director, IITD, which clearly indicates their academic excellence. The committee seems to have completely missed reading the pages documenting the achievements/publications of the young faculty. It is an unacceptable statement particularly when most of the young faculty members have clearly “outperformed” their colleagues from other Department who joined at the same time. The young faculties not only have publications in high ranking International Journals that have been featured elsewhere, but also have attracted several grants from various National and International Funding Agencies (DST-UKIERI, ISCB, GII British Council, EPSRC, UK). Research works of young faculty members are highlighted by different national and international news agencies (Nature India, TOI, HT, BBC, UK) which surely show the competency of the young faculties. Prestigious awards such as DuPont Fellow, Young Scientist Awards, Innovative Young Biotechnologist Award presented to the younger faculty speak volumes about the performance of younger faculty members.

- **Laboratory safety - an issue across all the three entities**
  The policy committee supports the point unconditionally. This is an aspect which cannot be neglected any further. All major renovations ongoing in the department are being done with special emphasis on maintaining international standards of lab safety. This has to be taken up in a big way across the institute. To meet the international standards of lab safety, a dedicated fund should be allocated to each of the units by the Institute.

- **Placement record very poor- hardly any jobs in the CORE sector in the DBEB**
  The dual degree programme offered by the department is a highly specialized course feeding mostly for higher studies like doctoral programmes. Over the last few years the department has witnessed a significant increase in the number of students pursuing higher studies after completion of their degree. Regarding jobs in core sector, the hard fact is that the industry’s salary has not kept up with the market. Many of our students who have taken up core jobs have not found the salary and the job profile challenging enough to continue. Though many of our students are employed by top notch core biotech companies, we have no control over external environment.
  It is worth mentioning here (which the Committee perhaps did not notice) that due to emphasis of the department on entrepreneurship, two of our M Tech students are now entrepreneurs in biotechnology area; one has already started his company and the other is on the verge of starting- these young and dynamic entrepreneurs will offer additional employment opportunities to our biotech students.
• Hands on experience in the laboratories missing. Students do not learn much in the laboratories.

Department is aware of the need of hands-on experience and importance of lab experiments. Due to increased number of students, Department has proactively started developing new UG Lab almost a year back. These labs will be available for conducting experiments from next semester onwards.

Recommendations

• DBEB-CBME to be co-located.

The recommendation comes to the policy committee as a surprise. The idea of co-locating two units distantly apart, not just in the list of courses conducted by the two but also by the divergent expertise of faculty members of the two units, is not at all reasonable. Faculty members of neither of the two units are competent enough to contribute, in any way, to the teaching component of the other unit. With unrelated mandates of these units, the co-location of the two units will in no way benefit either of them. The policy committee felt that the Review Committee has neither seen the expertise of faculty members nor they are aware of senate approved mandate of Department/Centre/School. It is important that senate approved mandate must be revisited before taking any other route. Also, the policy committee feels that the review committee over-stepped its brief in making such a recommendation. Creation/abrogation of a Department/Centre/School at IIT Delhi is an internal matter of IIT Delhi and has well-laid out procedures for doing this. Recommendation from the internal review committee is not part of that procedure.

The institute has in place a document, prepared only about six years ago, on the roles of departments and centres. This has to be used for making any re-organization of the departments/centres/schools.

On the other hand, the more obvious suggestion for co-location would have been of DBEB and KSBS. In fact the KSBS is an off-shoot of the department, with four of our faculty members being the founder members of KSBS. Two of the outgoing members are (Bio)chemical Engineers while the other two are biologists. Even after six years of the official genesis of the School, some of their faculty members are enthusiastically involved in teaching our courses. We would request the committee to give this overlap a serious thought.

In the interest of the Institute and these three units, it is desirable to create a centralised space with all major equipment from the three units to be available as common facility open to the three units. DBEB would be happy to share such an arrangement. This even has a larger implication, wherein across the Institute all scientists working in biology can have a common platform to work.
• Productivity of the department (as measured by number of papers published and other metrics) is below expectation. Department to look into this seriously.

The policy committee would like to know the yardsticks used by committee members. Our productivity had been compiled in the report presented.

• Teaching to be made more effective and less stressful. Students should be imparted soft skills training that will make them effective team workers and leaders in their profession.

Though the introspection related to our teaching’s standards is ongoing, we are not clear of the expectations of the review committee and logic of their conclusion to the above remark. We have teaching feedback from our students for each course for improving our teaching rather than falling back on unsubstantiated remarks.

• Faculty must be encouraged to meet their peers abroad to generate new research ideas and work on joint collaborative research projects.

In past funding has been received from Internationally well known companies / organisations such as Lockheed Martin Corporation, USA, Indo Swiss Collaboration in Biotechnology (ISCB) (jointly by DBT and Swiss Agency for Development & Cooperation), GII, British Council, EPSRC, UK, DST-UKERI to carry out joint collaborative research projects. Under ISCB project, in which 3 Swiss and 3 Indian institutes were involved for about 6 years, a biofertilizer product has been developed and the technology of its production has been recently transferred to a large industry. The Department is also involved in an Indo-US project on secondary biofuels with five other labs and three companies from US. The Department has a long-standing collaboration with the University of Newcastle upon Tyne, U.K., in the area of Environmental Biotechnology. We have successfully completed an EPSRC funded project involving IIT Delhi, Newcastle University and Glasgow University. Currently we are working together with Newcastle University in a British Council sponsored Global Innovation Initiative (GII) project with UMBC, U.S.A and UFMG, Brazil, as the other partners.

We shall constantly strive to continue the trend and venture into more such fruitful international collaborations.

• Attempts should be made to attract foreign students and also hire post doctoral students to carry out research in advanced areas.

We are pleased to have a German scientist in the department for the last two years. Researchers (Post-doc), PhD and Masters students from UK regularly visit the department for their PhD research
work / Masters dissertation under the supervision of the faculty members of the department. We hope to attract more such researchers and the Institute’s help in this aspect is sought. This is to meet the basic logistic requirements of foreign scientists.

• Faculty should regularly visit institutes of repute to motivate students to join the Department for Ph.D.

We are in the process of re-designing our brochures and working towards wider awareness of our in-house expertise so as to attract motivated students for departmental PhD programme.

• Technical staff must be regularly trained to handle new equipment. In addition, the centre should also look at their promotion policies.

The policy committee agrees with the internal review committee’s recommendation. Though our staff members are given trainings as per the need of the hour, this will be taken up proactively. As mentioned in our executive summary there is acute shortage of skilled Technical Assistants.

• Ph.D. students to be given international exposure. Master level students to be encouraged to publish papers in peer reviewed journals and conferences.

Each PhD student of the Institute gets the chance to present his/her work on an international platform once during the programme. Moreover, we have witnessed some reputed fellowships bagged by our students, like DAAD, Indo-French scholarship etc., which has given them a splendid opportunity to interact with their peers abroad. The work of M. Tech. and M.S.(R) students has been published.

• The department seems to have a lot of space at their disposal but the space is poorly utilized due to large number of scattered laboratories and of inactive equipment. Department to look into this.

As explained above (Pg 26).

• The Committee observed that large sections of the faculty, in particular most of the new faculty, were not performing as per expectations. The department needs to address this issue and ensure that the new faculty gets the expected support from the department resulting in their smooth transition and productive beginning.

As explained above (Pg 27 & 28).

• Teaching labs need a major update. Old equipment should be written off and new equipment and experiments need to be added to make the lab courses reflect the biotechnology of today.

The review committee was apprised of the fact that new teaching labs were already under construction and will be functional from Jan 2015. It should also be noted that the entire curriculum has undergone changes to keep up with the pace of science and development. This includes upgrading lab components, purchasing newer equipments and writing off old ones.
Entrepreneurship needs major encouragement amongst the students. Department should give some thought to the possibility of including such courses as part of their curriculum.

The Department is trying to promote entrepreneurship in all possible ways. In a start-up by our alumni, department has offered lab space and other infrastructural facilities to budding entrepreneurs (alumni of the department). This is one of the focus areas for us in the coming years.

The Department needs to reassess their curriculum and make it current as well as pertinent to today’s world. As per student feedback, a significant number of courses are being taught in a manner that has been the same for the past 2 decades.

As stated above (Pg 27)

General observations and Issues

1. The Committee feels that the three academic units should be co-located as there is a considerable overlap in their equipment and hence, sharing of the infrastructure and equipment will greatly benefit the students. The committee also felt that given the nature of (overlapping) of the two units namely, Dept. of BE&BT and centre of Biomedical Engineering, IIT may consider a merger of the two units. However, it was felt that the third unit, The School of Biological Science, while co-located, may operate separately as a unit, for teaching and carrying out research in basic biological services.

As stated above (Pg 29)

The last sentence, which is written without any reason being attached to it, exposes the pre-conceived notion and intention of the committee. Why such a “benevolent” attitude towards KSBS? The policy committee strongly objects to such statements by the internal review committee and feels that it is beyond the internal review committee’s mandate.

2. Industry participation was minimal across the board. It is recommended that the units be asked to focus on this along with IIT administration. Hiring a qualified project manager for each unit such that this person has the requisite skills (MBA-preferably) and can interface between the academic unit and the concerned industry. He/she will play an important role in initiating the thought process of attracting private funding for research through active industry participation. Other key roles of this person could be budget and IP management for the department and for key projects.

The policy committee strongly agrees to the suggestion put forth. We have taken the following initiatives to promote the interaction with industries: organising industry-specific workshops, joint extramural projects with industrial partners, joint M.Tech and M.S.(R) projects in collaboration with
the industry. We also welcome institutional support in implementing in hiring of a project manager who can be a liaison between DBEB and the biotech industry.

3. Entrepreneurship needs major encouragement amongst the students. The units should give some thought to the possibility of including such courses as part of their curriculum. Hiring of the above mentioned project manager is also likely to alleviate this issue.

As mentioned above (Pg 28 & 32).

4. Procurement of chemicals and equipment must be made electronic. Current system suffers from two major problems. First, a lot of time of faculty and students gets spent on purchasing. Second, the time it takes to accomplish these purchases is too long presently (3-4 months for chemicals and 6-9 months for equipment) resulting in major inefficiencies. This was the single most important issue raised during our interactions with students and faculty, and clearly the most serious one.

As mentioned above (Pg 23 & 24).

5. Reliable supply of utilities (electricity, water etc) needs to be put in place.

Institute should take urgent action for providing uninterrupted electricity (in house independent electricity generation units), water etc. This is one of the specific needs of Department as frequent failure of electricity results in loss of chemicals stored in – 80 and experimental materials prepared after month long hard work.

6. Reliable mechanism for the management and disposal of radio-active waste needs to be put in place. This must be taken up urgently.

We are actively involved in managing our bio-wastes and radioactive wastes. Institute should urgently put up the management plan in place for disposal of chemical and other organic waste.

7. Equipment installation, maintenance, and management needs to be carefully examined. High end analytical equipment should be moved to a central facility, assigned trained manpower and should be made accessible to all faculties.

In fact we propose moving high end equipment of CBME, KSBS and DBEB to a central facility with clear cut policy of operation of these equipment.
8. The Committee felt that the technical cadre for managing laboratories and key equipment is missing. The existing non-teaching staff appeared to be suffering from a lack of training and motivation.

We are glad to note that the committee agrees with this point which was stated in our review report. Technical assistants recruited directly by the department have been performing very well. However, as per institutional norm, many lab attendants were promoted to lab superintendents despite lack of basic understanding. There is urgent need of qualified technicians with clear cut promotional policy in place so that they can be entrusted with technical duties.

**Specific Recommendations**

1. The Committee felt that the productivity of the department (as measured by number of papers published and other metrics) was below expectation.

2. The department seems to have a lot of space at their disposal but the space is poorly utilized due to large number of scattered laboratories and of inactive equipment.

3. The department needs to attract more PhD students. The number of PhD students that have been hired in the last 5 years seem to be particularly low.

4. The Committee observed that large sections of the faculty, in particular most of the new faculty, were not performing as per expectations. The department needs to address this issue and ensure that the new faculty gets the expected support from the department resulting in their smooth transition and productive beginning.

5. The department needs to reassess their curriculum and make it current as well as pertinent to today's world. As per student feedback, a significant number of courses are being taught in a manner that has been the same for the past 2 decades.

6. Teaching labs need a major update. Old equipment should be written off and new equipment and experiments need to be added to make the lab courses reflect the biotechnology of today.

These six points have been answered at appropriate places above.

Besides these specific comments / feedback, the policy committee had some general feedback on the report of the internal review committee.
• For a flourishing department with historical leadership in Biochemical Engineering, with seventeen scientifically productive faculty members from varied research areas, and with a reputation of producing world class biochemical engineers, just to name a few, the review committee did not have a single encouraging point, or words of appreciation. The committee is totally silent on the academic achievements of the Department, compiled and given to it in 170 typed pages. The report, other than pointing out few critical issues, majorly reads like a “complaint list”. The policy committee felt that Internal Review committee has made recommendations without clarifying their rationale (as evident from suggesting merger of two unrelated units).

• Throughout the report levels and standards are being talked of without setting up the benchmark for performance. Department fails to understand the usefulness of the committee.

• There was no external member in Biochemical Engineering specialization from an academic institute, which was surprising. Further, the Chairman of the Committee was absent on the first day (and had no interest in knowing the relevance of biochemical engineering in development of biotechnological products and processes in general, and contributions of the department, in particular) while another member was absent on the second day. This speaks about the seriousness of the Committee to the assigned task!

The meeting ended with a vote of thanks to the Chair.

Preeti Srivastava
Convenor
Courses, Sem II<2016-17

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Instructor</th>
<th>Credits</th>
<th>Instructor Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>BBL341</td>
<td>Env Biotech (3)</td>
<td>SHAIKH ZIAUDDIN AHAMMAD</td>
<td>DE</td>
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</tr>
<tr>
<td>BBL343</td>
<td>Carbohydrates and Lipids in Biotech (3)</td>
<td>ATUL NARANG</td>
<td>DE</td>
<td></td>
</tr>
<tr>
<td>BBL431</td>
<td>Bioprocess Technology</td>
<td>V.S. BISARIA</td>
<td>DC</td>
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<td>BBL432</td>
<td>Fluid Solid Systems</td>
<td>SUNIL NATH</td>
<td>DC</td>
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<td>BBL433</td>
<td>Enzyme Science and Engg</td>
<td>RAVI KRISHNAN ELANGOVAN</td>
<td>DC</td>
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<td>BBL434</td>
<td>Bioinformatics</td>
<td>D.SUNDAR</td>
<td>DC</td>
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<tr>
<td>BBL443</td>
<td>Modeling and Simulation of Bioprocesses</td>
<td>ASHISH MISRA</td>
<td>DE</td>
<td></td>
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<tr>
<td>BBL445</td>
<td>Membrane Applications in Bioprocessing</td>
<td>G.P. AGARWAL</td>
<td>DE</td>
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</tr>
<tr>
<td>BBL736</td>
<td>Dynamics of Microbial Systems (3)</td>
<td>ATUL NARANG</td>
<td>PC</td>
<td></td>
</tr>
<tr>
<td>BBL740</td>
<td>Plant Cell Technology(3)</td>
<td>ASHOK KUMAR SRIVASTAVA</td>
<td>PE</td>
<td></td>
</tr>
<tr>
<td>BBL742</td>
<td>Biological Waste Treatment (4)</td>
<td>T.R.SREEKRISHNAN</td>
<td>PE</td>
<td></td>
</tr>
<tr>
<td>BBL745</td>
<td>Combinatorial Biotechnology (3)</td>
<td>PREETI SRIVASTAVA</td>
<td>PE</td>
<td></td>
</tr>
<tr>
<td>BBL746</td>
<td>Current Topics in Biochem &amp; Biotech (3)</td>
<td>SAROJ MISHRA</td>
<td>PE</td>
<td></td>
</tr>
<tr>
<td>BBL747</td>
<td>Bionanotechnology (3)</td>
<td>PRASHANT MISHRA</td>
<td>PE</td>
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<tr>
<td>BBL749</td>
<td>Cancer Cell Biology(4.5)</td>
<td>RITU KULSHRESHTHA</td>
<td>PE</td>
<td></td>
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<tr>
<td>BBQ301</td>
<td></td>
<td>P.K. ROYCHOWDHURY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BBQ302</td>
<td></td>
<td>PRASHANT MISHRA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BBQ303</td>
<td></td>
<td>ASHISH MISRA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BED800</td>
<td></td>
<td>RITU KULSHRESHTHA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BED851</td>
<td></td>
<td>SHILPI SHARMA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BED852</td>
<td></td>
<td>SHILPI SHARMA</td>
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</tr>
<tr>
<td>BED853</td>
<td></td>
<td>SHILPI SHARMA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BED854</td>
<td></td>
<td>SHILPI SHARMA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Discussion on feedback from BAP
3 messages

RAVI KRISHNAN E <ravikrishnan.elangovan@gmail.com>  Tue, Sep 12, 2017 at 2:29 PM
To: Ashish Misra <ashish.s.misra@gmail.com>, Atul Narang <narang.at@gmail.com>

Dear Ashish,

Recently there was item pertaining to DBEB discussed in Students Affairs Council, see the attached agenda flyer. I attended this meeting on behalf of Head, DBEB. We need to discuss the outcomes of this meeting in next DFB. Kindly include this as one of the items for next DFB.

My comments:

1. Students raised the issue of non-core internships are not considered for design units. I explained this is a departmental decision. Revision of this matter requires departmental discussion. I explained the rationale behind such decision i.e., we are fit to evaluate banking internship etc and not fair to judge students doing design projects with faculty/company/non core companies alike

2. Many of our final year students are falling short of design credit required for passing. We need to act on it.

Warmly
Ravi

________________________________________________________
Ravikrishnan Elangovan
Assistant Professor,
Department of Biochemical Engineering and Biotechnology,
Indian Institute of Technology, New Delhi
Ph: 011-26571057 / 09899998968

BAP feedback sep 2017.PDF
617K

Atul Narang <narang.at@gmail.com>  Tue, Sep 12, 2017 at 8:32 PM
To: Ashish Misra <ashishmisra@iitd.ac.in>
Cc: Ravi Elangovan <elangovan@dbeb.iitd.ac.in>

Please include for next DFB

Atul Narang

[Quoted text hidden]

Ashish Misra <ashishmisra@dbeb.iitd.ac.in>  Wed, Oct 4, 2017 at 7:36 PM
Reply-To: ashishmisra@dbeb.iitd.ac.in
To: Atul Narang <anarang@dbeb.iitd.ac.in>

------ Forwarded Message ------
Subject:Re: Discussion on feedback from BAP
Date:Tue, 12 Sep 2017 20:32:47 +0530
The meeting of *Space Planning and Utilization Committee* of the department was held on **Friday, August 25, 2017 at 2 PM** in the Committee Room (I-230) of the Department. 

The following members were present:

Prof. Preeti Srivastava, Prof. Ravikrishnan Elangovan, Prof. D. Sundar, Prof. Ziauddin S Ahammad,

- The members noted that the department has been allocated space in the **first and second floors of Wing 2 and Wing 3** of the new building **99C1** vide the letter no. 58087/2017/ADSP dated 16-06-2017 received from the Office of the Deputy Director (Strategy and Planning) (**Annexure – I**) 

- It was noted that space in **Wing 1** of the new building 99C1 is not being allocated by the Institute as the Wing 1 is also part of another new building 99C2 that would come up after the demolition of the exitisitng Textile Department building. The space allocated to the department as of now in **Wing 2 and Wing 3** of the building 99C1 is summarized below:

![Diagram of space allocation]

**Wing 1** is also part of Building 99C2 and no allocation is being done for now.
- **First Floor** – Lab 977 sq m, Faculty Room (2 #)  
- **Second Floor** – Lab 970 sq m, Faculty Room (2 #)

**Wing 2**
- **First Floor** – Lab 472 sq m, Faculty Room (3 #)  
- **Second Floor** – Lab 471 sq m, Faculty Room (6 #)

**Wing 3**
- **Total area = 1814 sq m (excl faculty rooms)**  
  - **First Floor** – Lab 909 sq m, Faculty Room (2 #)  
  - **Second Floor** – Lab 905 sq m, Faculty Room (2 #)

**Total space allocated for DBEB**: 
- **1st Floor** (1468 sq m)  
- **2nd Floor** (1499 sq m) in Wing 2 and Wing 3
It was noted that the entire Ground Floor (460 + 903 sq m) of the building 99C1, designated as Bio-X Cluster, is a common space allocated to all the academic units to be relocated there (DBEB, KSBS, CBME). The Committee nominated Profs. Ravikrishnan Elangovan and Ziauddin S. Ahammad to participate on behalf of the department in the Bio-X Cluster Committee to identify some common facilities that can be placed in the ground floor as well as in fifth floor of the building. A total area of 890 + 30 sq m has been allocated as common space in the fifth floor for all the academic units.

The Committee recommended the creation of following facilities for the department in the new building 99C1:

(A) Common facilities

<table>
<thead>
<tr>
<th>Facility</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instrumentation and other common Labs</td>
<td>3 labs ~ 5000 sq ft</td>
</tr>
<tr>
<td>Clean Room</td>
<td>200 sq ft</td>
</tr>
<tr>
<td>Cold Room</td>
<td>2 x 200 sq ft</td>
</tr>
<tr>
<td>Dark Room</td>
<td>150 sq ft</td>
</tr>
<tr>
<td>Radioactivity Room</td>
<td>200 sq ft</td>
</tr>
<tr>
<td>37 °C Room</td>
<td>200 sq ft</td>
</tr>
<tr>
<td>Utility Room (Autoclave, water)</td>
<td>400 sq ft</td>
</tr>
<tr>
<td>PG Room (PhD/PDF office space)</td>
<td>2000 sq ft</td>
</tr>
<tr>
<td>Visitor Room</td>
<td>300 sq ft</td>
</tr>
<tr>
<td>DBEB Office</td>
<td>300 sq ft</td>
</tr>
<tr>
<td>HOD Room</td>
<td>400 sq ft</td>
</tr>
<tr>
<td>Computation Lab</td>
<td>500 sq ft</td>
</tr>
<tr>
<td>Committee Room</td>
<td>500 sq ft</td>
</tr>
<tr>
<td>Multipurpose Room</td>
<td>5 x 200 sq ft</td>
</tr>
</tbody>
</table>

(B) Faculty rooms (additional)

<table>
<thead>
<tr>
<th>Facility</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 x 130 sq ft</td>
<td>~ 910 sq ft</td>
</tr>
<tr>
<td>~ 84 sq m</td>
<td></td>
</tr>
</tbody>
</table>

(C) Faculty Research Labs

<table>
<thead>
<tr>
<th>Facility</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uniform size labs</td>
<td>20 x 800 sq ft</td>
</tr>
<tr>
<td>~ 16,000 sq ft</td>
<td>~ 1,500 sq m</td>
</tr>
</tbody>
</table>

The Committee recommended that all the equipments purchased from the Institute Funds/DST-FIST, etc to be placed in the common space like Instrumentation Room/common facility, etc.

Since only 13 faculty rooms were allocated in Wing 2 and Wing 3, the Committee recommended creation of additional 7 faculty rooms from the space allocated to the Department.

The Committee recommended creation of uniform-size research labs for individual faculty in the remaining space that is available after creation of common facilities and additional faculty rooms.

The Committee noted from the space allocation letter that that the department can retain some labs in Block I. It was recommended that UG/PG teaching labs must be retained in the existing space. The additional labs/space to be retained is to be discussed and decided in the DFB.

The DBEB Space Committee also met with the User's Committee for Engineering Block 99C in the Committee Room on September 19, 2017 at 4 PM. The meeting was Chaired by Prof. M. Balakrishnan DD(S&P). Prof. Atul Narang, Head (DBEB), members from the Office of the Institute Engineer, CPWD and others participated. It was suggested that the Department should work with the Bio-X Cluster Committee to identify some common facilities that can be created in the Ground Floor. Prof. Balakrishnan had insisted that the department should furnish the details of services required in individual labs within a month's time for CPWD to create necessary provisions in the new building.
The details required for the different labs and common facility rooms were as given below:

<table>
<thead>
<tr>
<th>Particulars of Service</th>
<th>Details as required in the labs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  Partitions required in the lab (size and location to be marked on the plan)</td>
<td></td>
</tr>
<tr>
<td>2  Detailed operational layout of the equipment/machines in the lab with electrical load requirements of each equipment/machine</td>
<td></td>
</tr>
<tr>
<td>3  Number of 6/16 A Power Points required</td>
<td></td>
</tr>
<tr>
<td>4  Number of 3 Phase Power Points</td>
<td></td>
</tr>
<tr>
<td>5  Requirement of UPS Power (Number of 1 phase and 3 phase outlets)</td>
<td></td>
</tr>
<tr>
<td>6  Number of telephone points</td>
<td></td>
</tr>
<tr>
<td>7  Number of LAN points</td>
<td></td>
</tr>
<tr>
<td>8  Requirement of gases like O₂, N₂, compressed air or any other gas</td>
<td></td>
</tr>
<tr>
<td>9  Water and drainage requirement (if any)</td>
<td></td>
</tr>
<tr>
<td>10  Any other specific requirement in addition to above</td>
<td></td>
</tr>
</tbody>
</table>

It was recommended that these requirements need to be obtained from individual faculty members and placed before this Committee for preparing a consolidated list for submission to the Institute/CPWD.

The Committee recommended these for consideration of the Head (DBEB) and the Department Faculty Board.

D. Sundar
(On behalf of the DBEB Space Committee)
Subject: Block 99C Space Allocation and User Committee

Please find enclosed the list of faculty members nominated by each of the Departments/Centres that have been allotted space in Block 99C. The space allotted to each of the entities is also mentioned. Note the allocation for wing 1 of 99C (that is the wing that would come up after demolition of some of the textile buildings) is still under process and would be intimated later.

(M. Balakrishnan)
Chairman, Space Planning & Allocation Committee

Dean Infrastructure
Institute Engineer

Copy to: Head, DBEB
Head, KSBS
Prof. James Gomes (Bio-X Cluster)
Coordinator, CoE in Pharmaceutical Technology
Head, CBME
## User's Committee for 99C1

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Department/ Centre</th>
<th>Block allotted</th>
<th>Floor</th>
<th>Committee members</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DBEB</td>
<td>99C1</td>
<td>I(1468 sq m) + II(1499 sq m)</td>
<td>Prof. Z.A. Shaikh</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Prof. D. Sundar</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Prof. Ravikrishnan Elangovan</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Prof. Preeti Srivastava</td>
</tr>
<tr>
<td>2</td>
<td>KSBS</td>
<td>99C1</td>
<td>III(1528 sq m)</td>
<td>Prof. James Gomes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Prof. Tapan K. Chaudhuri</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Prof. Manidipa Banerjee</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Prof. V. Perumal</td>
</tr>
<tr>
<td>3</td>
<td>CBME</td>
<td>99C1</td>
<td>IV(1527 sq m)</td>
<td>Dr. Sandeep Kumar Jha</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dr. Neetu Singh</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dr. Deepak Joshi</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dr. Amit Mehndiratta</td>
</tr>
<tr>
<td>4</td>
<td>CoE in Bio-Pharmaceutical Technology</td>
<td>99C1</td>
<td>V(393 sq m)</td>
<td>Prof. Anurag Rathore</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Prof. Manidipa Banerjee</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Prof. Gaurav Goel</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Prof. Sudip Pattanayek</td>
</tr>
</tbody>
</table>

*Head, DBEB*
# 99C1 Allocation (16 June 2017)

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Floor</th>
<th>Wing</th>
<th>Labs</th>
<th>Faculty Rooms &amp; Others</th>
<th>Allocation to</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ground floor</td>
<td>Wing 1</td>
<td>9</td>
<td>975 2 30</td>
<td>Part of 99C2 - To be allotted separately</td>
<td>To be planned by Bio-X Cluster committee + Bio-X cluster offices</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wing 2</td>
<td>5</td>
<td>460 0 0</td>
<td>Common space</td>
<td>DSBE (146 sq m)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wing 3</td>
<td>8</td>
<td>903 2 30</td>
<td>DBBE (149 sq m)</td>
<td>Can keep some labs such that total area doesn't exceed 20% of current space to the Department</td>
</tr>
<tr>
<td>2</td>
<td>First Floor</td>
<td>Wing 1</td>
<td>5</td>
<td>977 2 30</td>
<td>Part of 99C2 - To be allotted separately</td>
<td>DBEB (1468 sq m)</td>
</tr>
<tr>
<td>3</td>
<td>Second Floor</td>
<td>Wing 1</td>
<td>9</td>
<td>970 2 30</td>
<td>Part of 99C2 - To be allotted separately</td>
<td>DBBE (1499 sq m)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wing 2</td>
<td>5</td>
<td>471 6 93</td>
<td>DBEB (1499 sq m)</td>
<td>Can keep some labs such that total area doesn't exceed 20% of current space to the Department</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wing 3</td>
<td>7</td>
<td>905 2 30</td>
<td>DBEB (1499 sq m)</td>
<td>Can keep some labs such that total area doesn't exceed 20% of current space to the Department</td>
</tr>
<tr>
<td>4</td>
<td>Third Floor</td>
<td>Wing 1</td>
<td>9</td>
<td>967 2 30</td>
<td>Part of 99C2 - To be allotted separately</td>
<td>KSBS (1528 sq m)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wing 2</td>
<td>5</td>
<td>473 9 129</td>
<td>DBEB (1499 sq m)</td>
<td>Can keep some labs such that total area doesn't exceed 20% of current space to the Department</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wing 3</td>
<td>8</td>
<td>896 2 30</td>
<td>DBEB (1499 sq m)</td>
<td>Can keep some labs such that total area doesn't exceed 20% of current space to the Department</td>
</tr>
<tr>
<td>5</td>
<td>Fourth Floor</td>
<td>Wing 1</td>
<td>9</td>
<td>966 2 30</td>
<td>Part of 99C2 - To be allotted separately</td>
<td>CBME (1527 sq m)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wing 2</td>
<td>5</td>
<td>472 9 129</td>
<td>DBEB (1499 sq m)</td>
<td>Can keep some labs such that total area doesn't exceed 20% of current space to the Department</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wing 3</td>
<td>8</td>
<td>896 2 30</td>
<td>DBEB (1499 sq m)</td>
<td>Can keep some labs such that total area doesn't exceed 20% of current space to the Department</td>
</tr>
<tr>
<td>6</td>
<td>Fifth Floor</td>
<td>Wing 1</td>
<td>4</td>
<td>352 11 242</td>
<td>Part of 99C2 - To be allotted separately</td>
<td>CoEBT (393 sq m)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wing 2</td>
<td>5</td>
<td>472 1 27</td>
<td>CoEBT (393 sq m)</td>
<td>Only 4 out of 5 labs allotted - temporary allocation for the period of CoE + 6 months</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wing 3</td>
<td>8</td>
<td>896 2 30</td>
<td>Common space</td>
<td>To be planned by Bio-X Cluster committee</td>
</tr>
<tr>
<td>7</td>
<td>Sixth Floor</td>
<td>Wing 1</td>
<td>0</td>
<td>0 4 72</td>
<td>Part of 99C2 - To be allotted separately</td>
<td>Common space</td>
</tr>
<tr>
<td></td>
<td>(building height</td>
<td>Wing 2</td>
<td>2</td>
<td>197 8 167</td>
<td>Common space</td>
<td>To be planned by Bio-X Cluster committee + Visitors offices</td>
</tr>
<tr>
<td></td>
<td>restriction - would not be</td>
<td>Wing 3</td>
<td>0</td>
<td>0 17 339</td>
<td>Shared faculty offices</td>
<td>For all participating faculty (overflow of all entities)</td>
</tr>
</tbody>
</table>

**Remarks:**
- 99C1 Allocation (16 June 2017)
- S. No. = Serial Number
- No. = Number
- Area (sqm) = Area in square meters
- Labs = Labs
- Faculty Rooms & Others = Faculty Rooms & Others
Regarding lapses in UG lab
5 messages

Shilpi Sharma <shilpi@dbeb.iitd.ac.in>                         Mon, Jul 10, 2017 at 4:07 PM
To: Atul Narang <narang.at@gmail.com>
Cc: Ravi Krishnan Elangovan <elangovan@dbeb.iitd.ac.in>

Atul, kindly suggest how are these lapses (in trail mails) to be handled.
There have two incidents in one month.

---------------------------- Original Message -----------------------------
Subject: Re: regarding leaving gas valves open in laminar room
From: "Gulshan Dass" <Gulshan.Dass@dbeb.iitd.ac.in>
Date: Mon, July 10, 2017 4:01 pm
To: "Ravi Krishnan Elangovan" <elangovan@dbeb.iitd.ac.in>
    "Shilpi Sharma" <shilpi@dbeb.iitd.ac.in>

On 16.06.2017 10:11, Gulshan Dass wrote:
> Dear Sir & Madam,
> >
> > This is to bring to your kind notice that some student working in
> > laminar room during off hours has left the LPG gas valves open during
> > whole night. When I opened the lab in morning there is huge smell of
> > LPG in the lab. Any mishappening might occur due to this negligence of
> > students. Therefore I request you to take the necessary action.
> >
>>
> > regards
>>
> > Gulshan

The name of student is Vatan Goyal IIIrd year doing project who was

On Mon, July 10, 2017 3:48 pm, Gulshan Dass wrote:
> On 10.07.2017 11:01, Shilpi Sharma wrote:
> >> Who are the students working? Check from the CCTV recordings. I asked
> >> you
> >> for such an information earlier also. Why have you not reverted till
> >> now?
> >>
> >>
> >>
> >> On Mon, July 10, 2017 10:42 am, Gulshan Dass wrote:
> >>>
> >>> Respected Madam & Sir,
> >>>
> >>> This is to bring to your kind notice that student working at night
> >>> left
> >>> the spectrophotometer unattended and in on position. I notice this
> >>> when
> >>> i came in the lab in morning.