

Department of Biosciences & Bioengineering

IIT-Bombay

Executive Summary of Department Review

The Department of Biosciences and Bioengineering comprises of two broad areas representing Biotechnology and Biomedical Engineering. The Department aims to create an ambience for the efficacious pursuit of scholarly activity in research and education, and endeavors to produce the leaders of tomorrow in this field. With the formation of the Department of Biosciences and Bioengineering, there has been a great impetus to research in bio-related domains at IIT Bombay. Added impetus has been provided by the new building in which we are now housed, and which was inaugurated by Dr. A.P.J. Abdul Kalam on 11th March 2013.

The Academic Programs of the Department has been running successfully and a review of achievements over the years has shown positive trends both in terms of students' career profiles and the quality of instruction as evident from student feedback. Extensive interactions with various groups in Electrical Engineering, Chemical Engineering, Aerospace Engineering, Computer Science, Chemistry and Mathematics make the departmental research activities truly interdisciplinary.

The departmental review was conducted on 7-8 Jan, 2014. The members of the review committee were [1] Prof. GS Bhuvaneshwar, former Head, Medical Technology Wing, SCTIMST, Trivandrum, [2] Prof. Rajiv Sarin, former Director, ACTREC Mumbai, and [3] Prof. Rajesh Gokhale (Director IGIB, New Delhi). Prof. Rohit Manchanda (Head, BSBE) presented the status of the department on various aspects such as faculty strength and their research areas, growth in faculty recruitment, student numbers and various activities of academic programmes and research activities during 2008-12. Currently, the department has on its rolls 25 faculty, some 260 students, of which around 150 are PhD students and the rest MSc and MTech students, and ~ 15 project staff.

The committee undertook a comprehensive review on our academic as well as research programs. The review committee members rated our MSc. and PhD program as "excellent" and were appreciative of our highly innovative teaching style and interaction of faculty members

and students. They also commented that our department provides conducive atmosphere for research in broad areas of biology and bioengineering. The review committee members also indicated few areas of improvements in academic and research programs and provided their recommendations. To improve the curriculum of the M.Tech program, vertical areas of specialization such as Medical Instrumentation, Biomaterials & Nanotechnology and Biosciences & Biotechnology should be implemented and number of elective courses should be increased. To strengthen MSc. Program, small pieces of equipment for the teaching labs should be increased and training in advanced instrumentation such as SEM, Flow cytometry, confocal microscopy etc should be initiated. To improve the research activity in the department, review committee recommended following: 1) Intramural funds to individual research labs (minimum Rs 2-5 lakhs/yr) should be provided, as is done in all leading biology R&D institutes in India; 2) Allocation of funds for equipment maintenance should be provided; 3) Animal house should be established at the earliest along with an ensured sustainability plan, and adequate staff including a veterinarian; 4) Academic fees of PhD program should be reviewed, and if possible, reduce the fee to attract and retain good PhD students; 5) Collaboration with industry should be promoted.

To implement the recommendation of review committee, an action plan has been worked out. At the department level, the curriculum of the M.Tech. and M.Sc. programmes will be reviewed. Collaborations in interdisciplinary area with other departments (IIT-B), institutes as well as industry will be actively fostered. Proposal of a sustainability plan for the animal house will be made and will be communicated to related functionaries of the institute. Workshops for students aimed at hands-on experience on sophisticated instruments will be conducted. Also we will review of the vision and mission of the department. At the Institute level, the following action points are recommended: 1) Allocation of intramural funds for individual research labs; 2) Allocation of funds for departmental equipment maintenance; 3) Appointment of administrative staff for the department; 4) Allocation of funds for sustainability of animal house facility based on the departmental proposal. The department looks forward to growth in research, industry interaction and to create an ambience of all-round academic excellence.