

PEER REVIEW OF CIVIL ENGINEERING DEPARTMENT, IIT BOMBAY (2008 – 2012)

Executive Summary

The Department of Civil Engineering has been a part of IIT Bombay since its inception in 1958. Over the years, the department has grown tremendously, and is now recognized as one of the best and major engineering departments in the country and ranked highly in the World for Civil Engineering. With its multifaceted faculty (44 members at present), it provides high quality teaching and research. At present the annual intake into UG, PG and Ph.D. programmes stands at 120, 69 and about 40 respectively. Besides, the Department is actively involved in basic and applied research and consultancy and provides high quality technical advisory support through various R & D projects and consultancy to various organizations. Our strong team of faculty members is working in the areas of Structural Engineering, Geotechnical Engineering, Water Resources Engineering, Transportation Systems Engineering, Remote Sensing, and Ocean Engineering. The department has attracted significant amount of sponsored research funding from government and private agencies and is delivering excellent output in terms of implementable solutions and large number of research publication in quality journals having high impact factor. The Department disseminates the knowledge gained from its high quality research through training programs and interacts with world renowned personalities through workshops and conferences. The students and faculty have won prestigious national and international awards and recognition, and continuing to bring laurels to the department and the Institute.

The committee consisting of Prof. P. P. Mujumdar of IISc Bangalore, Prof. Kerry Rowe of Queens University, Canada, Dr. S. Gangopadhyay, Director, CSIR-CRRI and Mr. Cyrus Dordi, Corporate Head, Ambuja Cements has been appointed for conducting the peer review of the Department. Department of Civil Engineering has prepared the documents containing the information on the department for the period 2008-2012 following the guidelines issued by the Institute Central Committee for the purpose of peer review by the appointed experts. These documents were sent to the appointed experts on 2nd January 2014. The meeting of the expert team for on site assessment was held on 13th and 14th January 2014. During the meeting the information and performance of the department on teaching, research and development, outreach and professional activities was presented to the experts. Discussions were held with the faculty members on these aspects of the department. Exclusive meetings and discussions were also held with the faculty joined in the last three to four years, members of all the departmental committees, and professor in-charges and staff of laboratories. The committee visited a few of the laboratories. The committee had meetings with about 50 students each from B.Tech. (including DD), M.Tech. and Ph.D. There was also a feedback session with the faculty members at the end. In addition, the expert members who stayed back for the second day had informal discussions with a few of the faculty members. Prof. Kerry Rowe has participated in the discussions through Skype. The queries raised by the expert members before, during and after the meeting were answered and additional information as required was provided. The members of the expert team have interacted among themselves during the process of the review over email and sent their reports individually. The last report has reached us on 28th January.

The committee felt that the Department is extremely well positioned to steer itself into a higher orbit. The committee noted that the department stood well in world rankings. The average rating given by the committee for our UG, PG and Doctoral Programmes is 7.4/10 each. The average ratings given for academic and sponsored research, Infrastructure, and admission and recruitment process are respectively 7.8, 7.6 and 7.6 out of 10.

Following are the positive comments made by the committee in their review reports:

- Sound UG Curriculum with good range of courses including electives, honours, and minor courses. Overall well organized M Tech Curriculum.

- Excellent training of doctoral students.
- Excellent working environment and team spirit between faculty and students
- Research Publications are by and large in good journals. Quite a few of the publications are in top rated journals of high impact (e.g., Nature Climate Change, ASCE JI. Of Engg. Mech., Geotechnique, Water Resources Research, etc.)
- High recognition for a few of senior faculty members
- Younger faculty members are conscious of the importance of quality of publications
- National Geotechnical Centrifuge Facility is unique for high end research. Geo-environmental lab is highly impressive, a good example of high quality research.
- Infrastructure is very well placed and faculty members are active in generating funds
- Department is upgrading and refurbishing its spaces. Facilities have greatly improved in last few years
- The faculty recruitment process followed is comprehensive

The expert members suggested acting on the following points:

- Department vision needs to be fully translated from words to reality
- UG Curriculum can be made more innovative. Research/Design Project work need to be made compulsory for UG students. Students need to be motivated for higher studies and research. More options for UG students for taking electives need to be provided. A capping design project can be introduced to be taken up as a team effort by UG students. Industry based projects and learning and interactions with Research Institutes need to be enhanced.
- The core content of M.Tech. curriculum in Water Resources Engineering needs to be enhanced.
- Efforts in motivating M.Tech. students to take up PhD research need to be increased.
- The current average duration of PhD is 4.5 years. The department needs to critically examine this and try to reduce to below 4 years. Advanced level courses exclusively designed for Ph.D. students need to be floated.
- Identify and recruit new faculty members in focused research areas and attempt to regroup into emerging areas
- There is need for increasing the number of international visiting faculty/visitors and international collaborative research projects
- Exercise care while publishing, in view of the proliferation of low level electronic journals. Department should identify top journals and strive to publish in those venues
- Attract quality international students and post-docs
- Course load per faculty should not be increased, should be rather reduced
- Routine consultancy projects should be discouraged.
- New faculty member should have excellent track record and should be an excellent team member.
- Department should consider creating “Centers of Excellence” in one or two areas

A subcommittee of the department policy committee is studying the outcomes of this review process. The department is taking steps to raise the faculty strength to 50 in the immediate short term and to 60 in the medium term taking into account the observations made above. The annual intake of M.Tech. and Ph.D. programmes is proposed to be increased to 100 and 50 respectively. The revised B.Tech. and M.Tech. curriculum that is being implemented will address most of the suggestions relating to curriculum. Strengthening research infrastructure through grants from funding agencies, creating at least a couple of centres of excellence, appointing world renowned academicians/professionals as visiting faculty and delivering research outputs of high impact will be the goals of the department in the near future. A Civil Engineering Innovation Centre housing all teaching and research laboratories, innovation space for faculty and clusters for students is being proposed to meet the future requirement and fulfil our vision, mission and goals in letter and spirit.