

# **Comments Regarding the Evaluation Report**

**Structural Engineering Department**

**Faculty of Engineering Sciences**

**Ben-Gurion University of the Negev**

5 January 2012

## **Introduction**

The staff of the Department of Structural Engineering at Ben-Gurion University appreciates the efforts, the time and the expertise that the members of the assessment committee devoted to the evaluation of the department.

The committee studied meticulously the self-assessment report submitted to them, took the effort to visit the department for two long days; interviewed the academic, technical and administrative staff, the students, the alumni and the university authorities. The committee presented a comprehensive report with many valuable comments which are greatly appreciated.

## **Study Program, Teaching and Learning Outcomes**

It is rewarding that the committee cherished the thought, effort, and vision put into the forming of the Study Program.

*" The program faculty is clearly engaged in the development of a modern Structural and Construction Engineering curriculum, and has put great effort into its development."*

The extensive work involved in the design of the laboratories, the design courses and the integration of computational classes was also appreciated.

*" The program provides an excellent coverage of an integrated, culminating design experience that exposes students to real world, structural and construction engineering problems."*

*"The laboratory-based classes provide hands-on experiences for the students are well integrated into the curriculum. "*

*"The faculty has introduced coding and computational methods in several classes throughout the curriculum."*

The general comments:

*"The teaching and learning outcomes of the B.Sc. program provide a rigorous education in the two specialties represented: Structural and Construction Engineering."*

*"The Structural Engineering program is up-to-date with most of the universities in the Western hemisphere focusing on computational mechanics of civil engineering materials and structures "*

These comments are very encouraging bearing in mind that the Department exists for less than 10 years.

The committee agreed with the plans for the Study Program in Geological Engineering and a graduate program (M.Sc.)

" 1. B.Sc. program in geological engineering. The committee feels that such a program would be of value and would have good synergy with the current program's focus on engineering responses to extreme events;

2. A graduate program (M.Sc.). The committee feels that graduate degrees are highly desirable and necessary at a research university such as BGU, and it encourages their development."

**The Recommendations with Respect to the Study Program are:**

<b>CHE Recommendations</b>	<b>Activities</b>	<b>Due Date</b>
<p><b>Intermediate</b></p> <p><i>Broaden the curriculum to include more general education courses for providing students with a deeper understanding of the societal issues and decision making processes pertaining to structural engineering and construction management.</i></p> <p>Or more specific:  <i>In particular, additional coursework, either required or elective, in engineering project economics, project decision making, engineering teamwork and project management, should be considered.</i></p>	<p>1. A new elective course "Decision Analysis in Engineering" has been added to the Study Program.</p> <p>2. The Course: "Construction Project Management and Planning" 374-1-4098 will be modified to "Construction Project Management" and be focused in Project Management.</p>	<p>1. Fall 2013 (October 2012)</p> <p>2. Spring 2012 (March 2012)</p>
<p><i>Formation of an external industry advisory board to help with placement of students and decisions regarding the academic directions of the Department</i></p>	<p>An external Industry Advisory Board is being formed.</p>	<p>June 2012</p>

## Students

The department examines constantly ways to improve the academic level of the enrolling students and the committee pointed out:

*"The committee is generally satisfied with the academic level of the students."*

### The Recommendations with Respect to the Students are:

CHE Recommendations	Activities	Due Date
<p><b>Immediate:</b> <i>Improve student faculty ratio by increasing the number of academic staff or by the acceptance of less students</i></p>	<p>To be decided by University Management</p>	<p>By Spring 2012</p>
<p><b>Intermediate:</b> <i>Enhance student quality by raising admission requirements</i></p>	<p>The Department has already started following this policy 5 years ago. Struct. Eng. Enrollment Threshold. 2008 – 430 2009 – 437 2010 – 445 2011 - 470 2012 – 510</p> <p>The intention is to increase the academic standards required (Enrollment Threshold) for admission for 2012-2013 to 530 (from 510 for the Academic year 2011-2012).</p>	<p>April 2012 and April 2013 (Enrollment threshold for Academic year 2013-2014 will be adjusted to the results of the enrollment to Academic year 2012-2013).</p>
<p><b>Long term :</b> Track progress of alumni after graduation</p>	<p>The Department together with the university unit has started recently to gather information about the progress of the alumni. The Department already established an "Association of Alumni and Fellows of the Department of Structural Engineering"</p>	<p>October, 2012</p>

## Human Resources

*"The committee found that the current faculty is fully capable of carrying out the scholarly mission of the department, in the sense of research orientation and teaching activity."*

*"The teaching laboratories at Ben-Gurion are well supported by capable engineers and/or technicians."*

*"The committee believes that the quality of external teachers focusing on design and hands-on-experience is strong."*

*"The committee concludes that the criterion for faculty promotion focusing on the quality of teaching and research is appropriate given the mission and goals of the University."*

The committee has recommended that:

*" the committee believes that there is an urgent need to increase the number of full-time faculty in support of undergraduate and future graduate programs."*

And

*"... there is a desperate need to enlarge the size of the faculty since the current size of the full time faculty in Structural Engineering, comprising eight faculty members, is the bare minimum to cover the basic needs of the existing program. The Department should aggressively pursue additional hires to increase the faculty size."*

The committee proposes that:

*"The process of recruiting faculty should be substantially upgraded to include new partnerships in this effort, perhaps by approaching various external organizations with direct access to graduate students on major university campuses overseas, such as the Hillel Foundation in North America."*

We accept the suggestion and we will contact the Hillel Foundation. We have already contact similar organization: Nefesh BeNefesh which helps to bring new immigrants directly to suitable positions.

The committee proposes as well that:

*"Offering more permanent joint faculty appointments with Mechanical Engineering and possibly with other departments such as Industrial Engineering and Management is advisable."*

It seems that the committee was under the wrong impression that there is only one  
*" full-time faculty member in Construction Engineering and Management"*

In fact there are two members of staff in the area of Construction Engineering and Management:

The first is Professor I.Shohet: the head and founder of Construction Engineering and Management track. Professor Shohet has put extensive thoughts and efforts in planning the Study Program and has developed new research avenues in the area of Extreme Event Management.

The second is Dr. S. Isaac: a new Faculty member joined the Department recently.

The Department persists in its efforts to increase its number of full time faculty in this field as well.

It appears that there are two obstacles:

First, the number of Ph.D. graduates in the area of structural engineering is very small as pointed out by the committee in the general report.

Second, the lack of CHE full accreditation deters young candidates to apply to a Department without a clear future.

In spite of the above obstacles, the Department does not cease its efforts.

At present, the Department negotiates with three candidates. Further information is not revealed in order to protect their privacy.

The major obstacle in recruiting new academic staff is the limited allocation of staff to the Department. At present there is only one vacant position.

The committee stressed the importance of this issue:

*"This problem has been discussed by the committee with the Rector, the Dean and the Head of the Department, who indicated that they would like to expand the number of faculty positions in the department but are waiting for the recommendations of this committee regarding the directions which the Department should pursue. "*

The university management (President, Rector) will make decisions by Spring 2012.

The increase in the size of the body of Faculty member implies an appropriate increase in the administrative and technical staff.

**Recommendations with Respect to Human Resources are:**

<b>CHE Recommendations</b>	<b>Activities</b>	<b>Due Date</b>
<p><b>Immediate:</b>  <i>Add at least one faculty member in Geotechnical Engineering and additional full-time faculty in Construction Engineering and Management in order to strengthen the overall state of the Department</i></p>	<p>1. One of the candidates to join the Department is in Geotechnical Engineering.                      2. To be decided by University Management</p>	<p>1. October 2012                       2. Spring 2012</p>
<p><i>Offer more joint faculty appointments with other departments</i></p>	<p>The Department has one joint position with the Department of Geology and wishes to expand the nature of this connection with additional Departments such as Industrial Engineering and Management and Mechanical Engineering.</p>	<p>October 2013</p>
<p><b>Intermediate:</b>  <i>Increase the size of faculty to achieve a student to faculty ratio of approximately 20:1</i></p>	<p>To be decided by University management</p>	<p>Spring 2012</p>

**Research**

At present, the Department of Structural Engineering has neither Graduate Program (M.Sc) nor research laboratories. The lack of these two hinders severely the research carried in the Department.

It is encouraging that the committee has appreciated the abilities and desires of the members of staff to pursue research activities in spite of lacking M.Sc. students and research laboratories.

*"The committee found that the current faculty is fully capable of carrying out the scholarly mission of the department, in the sense of research orientation"*

*"Structural Engineering faculty takes advantage of laboratories in the Mechanical Engineering Department and other laboratory facilities on campus for carrying out research. This demonstrates the desire and capability of the faculty to engage in research, but it is clearly not acceptable for a department with the available talent and future plans (not) to offer graduate programs requiring student involvement in research."*

The committee appreciates that the Department has distinctive research interests with considerable potential:

*"The focus in Structural Engineering is on earthquake engineering, optimal control, and protective structure"*

*"The future focus in Construction Engineering and Management research is likely to be on the engineering management of disasters and other extreme events."*

And that

*"The faculty research focus allows for a strong link with IDF needs in blast protection of civil engineering structures."*

The committee indicates bluntly that:

*"The scholarly productivity of the faculty should be substantially improved; in the past two years, faculty published less than one refereed journal article per faculty member. This is subpar in comparison with research-intense universities elsewhere. Research funding level should also be substantially increased."*

This situation is changing promptly. In this year, 2011, some of the faculty submitted a considerable number of research papers to leading journals in their respective field of research.

In order to increase the opportunities for the faculty to carry out scholarly research, the Department is collaborating with the Department of Mechanical Engineering by offering M.Sc. specialization track in Protective Technologies.

The Department Faculty is managing and participating in this program and it is geared for Structural Engineering graduates.

Due to the lack of research laboratories, the Staff has difficulties in obtaining research funds.

The Department has not received from the university any funds for research laboratories. Some of the Staff did not get even absorption funds (sal clita) and in some cases the personal absorption funds were donated to build teaching laboratories.

For example, Prof. Levy has been recently recruited, received mere \$2,800 as an "absorption funds". This sum does not even replace his basic personal equipment, left behind in the Technion before joining Ben Gurion University.

The Department has lately won a tender carried out by the Ministry of Defense in order to establish a "Centre of Knowledge for Explosives Safety".

Hopefully this Centre will provide some funds for building research laboratories. But without the University financial support, progress will be very slow.



**The Recommendations with Respect to Research are:**

CHE Recommendations	Activities	Due Date
<p><b>Immediate:</b></p> <p><i>Increase research funding and other opportunities for faculty to engage in scholarly research</i></p>	<p>1. The Faculty members are engaged in supervising 9 students for a Ph.D. degree presently.</p> <p>2. M.Sc. Study Program in Structural Engineering – Extreme Events, planned lately by the Department has been already approved by the Faculty of Engineering Sciences and is in the process of the University approval <b>and will be submitted to CHE</b></p> <p>3. Submit competitive research proposals to Competitive funds such as ISF, BSF, GIF, State agencies, such as MNI, MHC, and the IDF.</p>	<p>1. 2012</p> <p>2. October 2012</p> <p>3. November 2012</p>
<p><b>Intermediate:</b></p> <p><i>Increase scholarly productivity of the faculty as manifested by faculty authorship of quality refereed journal publications</i></p>	<p>Submission of a considerable number of research papers to leading journals in the fields of Structural Engineering, Geotechnical Engineering, Construction Engineering and Management, and Building Materials. Increase the average number of peer-reviewed publications to 2 in 2013 and 3 in 2015.</p>	<p>2012-2015</p>
<p><b>Long term:</b></p> <p>Create new synergies between Structural Engineering Faculty with additional engineering departments at the University.</p>	<p>Create joint research ventures with Mechanical Engineering, Industrial Engineering and Management, Safety Engineering Unit and Bio-Medical Engineering.</p>	<p>2013-2015</p>

## Infrastructure

The committee realized the major disadvantage of the Department - its poor housing and inappropriate location and remarks:

*"The current educational program in Structural Engineering has a number of high-quality, laboratory-intensive classes. The Committee is impressed by this fact in light of the overall poor condition of the building housing the Department of Structural Engineering."*

The committee has pointed out:

*"The greatest shortcoming of the Structural Engineering facilities at Ben-Gurion is its current location. The Department of Structural Engineering is the only department located away from the main University campus. This hampers the work of the faculty and, in particular, that of the students, since the logistics of moving back and forth between the two locations is not simple."*

The poor lodging and inappropriate location of the Department has negative impact not only on the students but as well on additional aspects.

Computer facilities:

*"Computer facilities and software available to the Department are adequate but the lack of connectivity to the main campus hinders the integration of resources with other engineering departments at the University and more effective development of the Department's computational infrastructure."*

Research activities

*"Offering more permanent joint faculty appointments with Mechanical Engineering and possibly with other departments such as Industrial Engineering and Management is advisable. This action would enhance the research standing of the Dept. of Structural Engineering, particularly in areas such as structural engineering mechanics, construction materials, structural safety, and blast protection of structures."*

Separation from the University main campus hinders research collaborations.

Also the adjunct faculty is suffering from these conditions.

*"The adjunct faculty is currently not provided with office space. They only have access to a conference room that is made available for holding office hours with students. It would be highly desirable to provide these faculty with office space, even if shared, in order to better integrate them into the Department and to facilitate their interaction with the students."*

The committee pointed out that providing the Department with suitable lodging is extremely vital and should be prior to its future development.

*"... there is an urgent need to improve the facilities, i.e., moving the department from its current location to the main campus of the university. This move should be made before opening the graduate program."*

The committee has found the above recommendation to be of utmost importance and presented it forcefully at the summing up meeting with the Rector, Dean and the head of Department:

*"The committee was told that the move to the main campus will occur in two years, and the committee strongly believes that such a move will be vital to the Department's future well being. In the meantime, the University administration expressed a commitment to improving the students' service facilities at the present location of the Department."*

**Recommendations with Respect to Infrastructure are:**

<b>CHE Recommendations</b>	<b>Activities</b>	<b>Due Date</b>
<p><b>Immediate:</b> <i>Acquire additional equipment for laboratories</i></p> <p><i>Move to main campus</i></p>	<p>1. Apply for soil identification, compaction, consolidation, stiffness and shear strength experimental equipment</p> <p>2. To be decided by University Management</p>	<p>2011</p> <p>Spring 2012</p>
<p><b>Long term:</b> <i>Create office space for adjunct faculty</i></p>	<p>The University allocates 3 rooms for the adjunct Faculty in the main campus for office hours.</p> <p>Office space will be allocated to the adjunct Faculty when the Department moves to its permanent housing.</p>	<p>2011</p> <p>Unknown</p>

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