

November 7th, 2018

פרופ' גל דבוטון
משנה לרקטור



**Faculty of Engineering Sciences
Department of Mechanical Engineering**

**Response to Evaluation Report
of the Committee for the Evaluation of
Mechanical Engineering Study Programs
in Israel**

October 2018

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The Report of the Committee for the Evaluation of Mechanical Engineering Study Programs in Israel was received by the Department Chair on July 4, 2018, and was made available to the faculty members promptly. Although the Report arrived during the summer break and this response is being prepared while the break is still ongoing, the Report was carefully studied. In fact, during the last three months, the Department continued to implement the results of its self-evaluation process while already taking into account the detailed written comments of the Committee, in addition to the oral comments communicated during, and in the aftermath of, the Committee visit.

This response was prepared by the Department Chair and discussed with the faculty members, who received its complete draft. Then, the response was sent to the Dean of Engineering and Vice-Rector, who provided their valuable comments.

In the following table, we address all points of criticism and suggestions made by the Committee. The points of praise (clearly given e.g. for the undergraduate study program, the research and the senior faculty) are mostly excluded, except for the occasions where they set the framework for further points or are needed for the sake of continuity.

The table is built according to the sections of the 2018 Committee Report, namely, Section 2: Executive Summary (reproduced in its entirety) and Section 3: Observations, where the latter includes Introduction, Management and Administration, Vision, QA & Self-Evaluation Process, Study Program, Teaching and Learning, Faculty, Research, Students, Infrastructure. One can note that in many cases our responses include concrete steps already undertaken by the Department. In most cases, these steps result from the self-evaluation process, and we are happy that our findings were supported by the Committee.

Our detailed responses to Section 3 of the Report are followed by a section, which addresses Section 4: Recommendations of the Committee Report and, in fact, summarizes our reflections on the report and our current work aiming at its thorough implementation.

2018 Report	Follow-up and implementation
<p>Section 2: Executive Summary</p>	
<p>Aspects of the program related to the vision, QA process, study program, teaching, faculty, research, students, and infrastructure met the acceptable threshold level of performance. Aspects related to the management and administration did not. In particular, the Senior Administration should improve communication and transparency with the faculty. BGU has the potential to exploit many changes occurring in the south of Israel. The Faculty of Engineering Sciences will play a critical role. However, effective leadership is required to build consensus in the faculty, including in the Department of Mechanical Engineering, and move in the right direction.</p>	<p>The Department is happy to learn that the academic side of its activities has met with the Committee's approval. Of special value for us is the Committee's high opinion on the Quality Assessment process undertaken by the Department, as expressed by the Committee at the concluding meeting of their visit, in the presence of the Vice-Rector and the Dean. As stressed both in our self-evaluation report and during the visit, the department has excellent ties with the Dean who started his first term on August 1, 2017. The University undergoes a considerable transition, with the new Rector, who started on August 1, 2018, and President, who shall start in December 2018. We may thus expect considerable shifts in the Senior</p>

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	Administration attitudes to communication, transparency, etc.
Section 3: Observations	Follow-up and implementation
3.1 Introduction	
... The Department of Mechanical Engineering educates ~760 students for Israeli industry and academia. It is well integrated and supported by the central administration at BGU. The Committee was confident that the School is capable of sustaining and enhancing the ME program.	The Department will continue to do its best in educating its students on all levels. We expect the University to go on with its support of our efforts.
3.2 Management and Administration	
<p>... the Committee observed a lack of effective communication between faculty and various levels of the administrative team. The Committee encourages all stakeholders to engage in effective and transparent communication.</p> <p>The Committee was unable to discern the true extent of departmental decision-making and budget autonomy. However, the program has a well-established committee structure and all faculty appear to be fully integrated into the academic decision-making process, ...</p> <p>The Department's short-term plan is to fill their open faculty slots, bringing the faculty size to 25. The Department has had difficulty identifying top-level candidates ...</p> <p>In terms of diversity, the Department is aware that it has no female faculty and only 13% female undergraduates. (N.B. the</p>	<p>As stressed in our self-evaluation report and during the Committee visit, the communication with the Faculty of Engineering Sciences is no less than excellent. The Department will work closely with the new Senior Administration on the University level.</p> <p>As explained in the self-evaluation report, the Department is autonomous in its academic decision making, although there are issues like dual degrees where cooperation with the Dean and other departments is essential. The faculty members are fully engaged in this process. As for the budget, its overall framework is established by the University and the Faculty, reflecting the rules and regulations that exist in Israel.</p> <p>Since the Committee's visit, the Department has completed the hiring process for 3 new faculty members (of which 1 has decided for now to continue his postdoc in the US, 1 started in October 2018, and 1 has just been approved by the Rector – see details below).</p> <p>The Department works on increasing the number of female students in many different</p>

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<p>female enrollment in the MSc program has reached an impressive 25%.) The Department has outreach programs to engage and recruit female students, but they could do more. At times, the program conveyed a fatalistic attitude about gender diversity.</p> <p>The Committee encourages the Department to redouble its efforts, especially in recruiting female faculty.</p> <p>The program also provides scholarships to students of low socioeconomic background, but they should increase mentoring and non-financial support for these students.</p> <p>In this area of evaluation, the Committee determined that BGU does not meet the acceptable threshold level of performance.</p>	<p>ways, including the recently started program in Mechanical Engineering for high-school students, open campus days, etc. We are aware of this problem and need to find additional ways to address it.</p> <p>As for the female faculty, we have found an excellent female researcher who is our own graduate, in both B.Sc. and M.Sc. degrees, and finished recently her Ph.D. at the University of Cambridge. The Department has completed all necessary procedures, the Dean has approved this candidacy, and the Rector has just approved this hiring.</p> <p>The Department is in fact very attentive to this issue, as well as to the students' needs in general. Still, we should see how the Undergraduate Instruction Committee could do more.</p> <p>The issues of communication with the Senior Management and of hiring/diversity were clearly detected by the Department in its self-evaluation process and reflected in our detailed report with complete frankness. Moreover, these concerns were clearly raised by the Committee as the two central issues at the concluding meeting of the visit. As discussed above, we are by no means throwing in the towel – rather, the Department is doubling its efforts in these directions. We hope the University administration would be attentive to these concerns, as well.</p>
<p>3.3 Vision</p>	
<p>The Department has a strategic plan which seeks excellence in teaching, excellence in research, and stronger connections to industry. The self-evaluation report listed several implementation steps toward fulfilling the strategic plan. The Department is encouraged to refine and document its plan.</p>	<p>The strategic vision of the Department has been thoroughly discussed and updated on a continuous basis, in fact since the previous self-evaluation process completed in 2008. The Department has a strategic plan and a more detailed plan covering the next five years. These documents, especially the latter one, are discussed regularly and updated</p>

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	upon the decision of Department committees.
3.4 QA & Self-Evaluation Process	
The Department thoroughly addressed the previous evaluation from 2008, particularly on curricular issues ... The strengths, weaknesses, and future steps were then outlined ... In general, the QA process has been driven by the Department rather than the central administration.	The Committee's conclusion is of crucial importance for the Department, as it acknowledges our earnest attitude to the recommendations and thus provides an additional impetus for the faculty members to engage in self-evaluation and continuous improvement of all aspects of the Department activities.
3.5 Study Program	
<p>The undergraduate study program was carefully revamped in response to the last evaluation. It now offers considerable flexibility for students ... The Committee commends the Department for defining a unique BGU ME program.</p> <p>The Department also offers several dual degrees with other departments. They have different credit requirements and lengths. While it is too early to judge their success, the dual degree with Materials Engineering (introduced in 2012) has an increasing enrollment. This indicates that it caters to student needs.</p> <p>The lab courses were well organized, but the Committee sensed that they may be too prescribed. They should be adapted to encourage critical thinking.</p> <p>In the graduate program, students cannot take more than two courses outside the</p>	<p>We are very happy that our present Study Program, adopted and implemented during the last decade, has met with the Committee's approval.</p> <p>We would like to note that "different credit requirements and lengths" are defined by the Council for Higher Education. We believe that the successful running of these programs under these severe rules is an achievement by itself. We also believe that in addition to an increasing enrollment (and this year we have detected a significant interest in the dual ME – EE degree, as well), the feedback that we have from the industry about the graduates of these programs is very encouraging.</p> <p>We were somewhat puzzled by this comment (the 2008 Committee concluded that "The laboratory courses and facilities are assessed to be outstanding"). The present Committee visit took place when no labs were running because the academic year had ended by then. The Committee members were guided in the labs by our technical staff – their unusual devotion and expertise do not mean that the students are not exposed to independent thinking and work.</p>

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<p>Department for credit. The Committee felt that additional flexibility is needed to support the increasing multidisciplinary of ME research.</p>	<p>This issue will be discussed by our Graduate Instruction Committee.</p>
<p>3.6 Teaching and Learning</p>	
<p>... The Department should remain vigilant in monitoring the performance of their TAs. Student surveys are conducted at the end of each course and are taken seriously.</p> <p>Some faculty use different teaching techniques (e.g. posting online recordings of the board with a voice-over explaining each step). Faculty are encouraged to continue these approaches and consider additional techniques such as active learning, problem-based learning, and flipped classrooms.</p> <p><i>Mechanical Design Project, Engineering Project 1, and Engineering Project 2</i> do not have a syllabus.</p> <p>Different instructors from industry teach the Mechanical Design Project. It was unclear how quality is assured between the different instructors.</p> <p>The final projects presented to the Committee were not at the level expected for a university. Within each project, the Committee felt that the quantity and quality of the results were lower than at other ME programs in Israel.</p>	<p>The Department is monitoring the performance of TAs not only via the student surveys. One of the ways is to have the elected student representatives report on each and every course in the curriculum at the end of the corresponding semester. This approach started with the class which now is going into their last year, and submits its complete report, frank and balanced, to the Department Chair every semester.</p> <p>We strongly encourage our faculty members to continue and develop personal and personalized approaches to teaching, active learning techniques and problem-based learning.</p> <p>Indeed, we always felt that a syllabus on each of these courses would be too generic. The Department Projects Committee is going to address this issue in the final project courses, in the framework of planned changes as presented below.</p> <p>This course has been added in response to the recommendation of the 2008 Committee and is being constantly improved. Although the course is taught by highly experienced instructors, the Department is discussing ways of its quality assurance, better uniformity and overall improvement.</p> <p>This conclusion of the Committee was somewhat unexpected (the 2008 Committee concluded that “The final projects are well-designed and provide the students with an outstanding culminating experience”). The Committee visit took place on Sunday, June 24. The projects, presented to the Committee, were picked on Thursday, June 21, during the Project Day of the Faculty of</p>

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<p>... In general, students receive clear assessment criteria; however, in some cases homework solutions are not given. Old exercise and exam solutions should be available.</p>	<p>Engineering Sciences. This is to say that no real selection was done because of scheduling, and the projects were yet to be evaluated and graded. Thus, the main criterion was the variety of topics, rather than excellence.</p> <p>Having said that, the Department takes this point of criticism extremely seriously. The issue of final projects is already undergoing a revamp. Since the Committee's visit, the Department has hired a faculty member with a multi-year record of leading research and design oriented projects in the industry. It was decided that this new faculty would head the Projects Committee from October 1, 2018. He will work with the Department Chair, faculty members and project advisers, aiming at significant changes and improvements found necessary.</p> <p>The Department encourages its members to provide as much supporting material as possible. Still, it should be noted that, due to the generation shift, many key courses are taught by new faculty members and thus "old exercise and exam solutions" are not the "examples" sought by the students.</p>
<p>3.7 Faculty</p>	
<p>The Committee believes that the faculty size is not sufficient. This has resulted in high teaching loads, increased the student-to-faculty ratio, and limited growth in strategic research directions without critical mass.</p> <p>The Department should develop a strong vision and aggressive hiring plan to exploit the slots and other resources available from the Administration.</p>	<p>As far as we could understand, this comment is related to the number of positions within the Department, on which we do not have any real influence. Still, some maneuver is possible within this situation: thanks to their achievements in research, 8 of our faculty members (which is 40% of the actual workforce) will have teaching exemptions during the academic year 2018-2019.</p> <p>As already stated above, we never give up in our quest for new and excellent faculty members, including those from our own graduates (as noted also by the Committee). The University has already become more attentive and accommodative to the needs of new faculty members, including the seed</p>



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<p>Insufficient technical staff is provided to support the ME faculty's research activities, especially compared to BGU colleagues in Natural Sciences.</p> <p>Overall, the climate among the regular faculty is good; the adjunct faculty also felt part of the Department. However, not all policies from the higher administration are clear to the faculty. This leads to frustration regarding various issues, including the distribution of overhead returns and discretionary funds, and the heavy bureaucracy and paperwork.</p>	<p>money allocation and infrastructure requirements. We hope these trends will be boosted under the new Administration.</p> <p>This issue is a real Achilles heel for the BGU engineering departments. The issue was raised this year with the Director General of the University who visited the Department. Our hopes are that the new Administration will act.</p> <p>Indeed, such issues as, among others, transparency in the decision making, bureaucracy, and use of grant money, make the faculty members feel unnecessary frustrated. We hope that the new Administration will make real steps to improve the situation.</p>
<p>3.8 Research</p>	
<p>In this area of evaluation, the Committee determined that BGU clearly meets the expected threshold level of performance.</p>	<p>The Department is determined to keep up its good work in research.</p>
<p>3.9 Students</p>	
<p>The Department has high admission standards, and the quality of the students is high ... The Department does not have a clear picture of its drop-out rate, but an internal analysis has been initiated ... BGU and the Department should work to maintain contact with its alumni.</p>	<p>Preservation of the students' quality is one of our major tasks considering a rather challenging environment. Indeed, in the past the drop-out, albeit known as small, was not quantified. Recently, the Vice-Rector conducted a study on the subject, which was presented to the Department Council and caused an active discussion. In particular, it was suggested to add students who transfer to the Department, and to make a distinction between those who studied under the old and new study programs over the last ten years. We are looking for ways to improve ties with our alumni.</p>
<p>3.10 Infrastructure</p>	
<p>The ME program currently has adequate research and office space. However, if the open faculty slots are filled, this situation will likely change ... It is expected that the</p>	<p>Indeed, at the moment we do not experience any shortages in office space. We are also well-prepared to provide the new faculty members, within the current position count,</p>

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<p>anticipated new BGU campus will enable the Department to obtain more, better-designed space, allowing the faculty to grow in size.</p> <p>The Department's self-evaluation report notes that access to some journals from the library is an issue.</p>	<p>with adequate offices. The laboratory space is more challenging but the Department is aware of this issue and has a portfolio of approaches to it. It should be noted that the Department has never received any indication that it would be allowed to grow into the new (northern) campus.</p> <p>This issue will be raised with the university Library.</p>
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Section 4: Recommendations	Follow-up and implementation
<p>Essential recommendations:</p> <ul style="list-style-type: none"> • The Senior Administration should improve communication and transparency with the faculty. • The Department should enhance its efforts to fill their open faculty slots, bringing the faculty size to 25. 	<ul style="list-style-type: none"> • As stressed above, the communication and transparency on the Department and Faculty levels is excellent. We shall work jointly with the new University Administration on these issues. • The Department is working on this issue relentlessly. Since the Committee visit in late June, we have completed hiring processes of three new faculty members, as detailed above. The Department keeps a constant connection with a number of potential candidates who are now pursuing their postdoc studies in the leading universities abroad.
<p>Important recommendations:</p> <ul style="list-style-type: none"> • The Department should continue to work to improve its diversity, particularly at the faculty level. • The Department should improve the level of the final projects in the undergraduate program. • The Department should quantify its undergraduate drop-out rate and, if necessary, implement changes in admissions or student supervision to improve. 	<ul style="list-style-type: none"> • This issue is very important to the department, as reflected in the self-evaluation report. Recently, we identified an excellent female candidate and completed the hiring process on the Department and Faculty levels, with the hiring just approved by the Rector. • This issue, identified by the Committee, shall cause the Department to reconsider its approach to the final project. One of our newly hired faculty members has a vast experience in leading research and development projects. He will be in charge of this process. • As explained above, a detailed drop-out analysis has already been started by the Vice-Rector, who presented its outcomes to the Department Council and received specific recommendations on its improvements from the faculty members.



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Desirable recommendations:	
<ul style="list-style-type: none"> • The Department is encouraged to refine and document its strategic plan. • The Department should consider making available more exercise and exam solutions for the benefit of the students. • The Department should consider whether their lab courses encourage critical thinking. • The Department should consider enhancing the connection between the Department and its alumni. • BGU should improve journal access at the library. 	<ul style="list-style-type: none"> • This is a continuous process in the Department, related to its tradition of self-evaluation. • This issue will be thoroughly addressed by the relevant committees of the Department. • We do believe that our lab courses are outstanding, but a critical reflection is always good and will be done. • This is a very important issue in our eyes, which should be discussed with various bodies on the University level, in order to achieve practical improvement. • We shall work with the University Library to resolve this issue.

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