

5.4.2017

Alex Buslovich Bilik  
Coordinator of the Committee for the Evaluation of Medical and  
Biomedical Engineering Study Programs  
Quality Assessment Division (QAD)  
**Council for Higher Education**

**Re: Afeka Academic College Response to the Report of the Committee for the  
Evaluation of Medical and Biomedical Engineering Study Programs**

Dear Ms. Buslovich Bilik,

Pursuant to your letter of January 9, 2017, attached please find our response to the recommendations detailed in chapters 3 and 4 of the report. We would like to thank Prof. C. Ross Ethier and the members of the Committee for their in-depth evaluation of the Medical Engineering program during their on-site visit at Afeka College of Engineering. We are especially grateful to the Committee for the detailed report on our Medical Engineering program. The Committee's helpful recommendations are appreciated and will contribute to achieving our goals. We are also extremely grateful to the Committee for recognizing our program's strong points and view this as confirmation that we are proceeding in the right direction.

Best Regards,  
Prof. Ami Moyal  
President



**Copies:**

Dr. Anat Ratnovsky, Head of Medical Engineering School - Afeka College of Engineering

Dr. Itzhak Aviv, Head of the Committee for Evaluation of the Quality of Education - Afeka College of Engineering

Subject	Committee Recommendation	Classification of Recommendation	Steps toward Implementation	Time Table
<p><b>2 - Mission and Goals</b></p>	<p>1. The Department undertake, in conjunction with senior College leadership, a detailed discussion of future student enrolment targets, including consideration of: (i) the special environment arising from the intimate nature of the department; (ii) the business plan for the Department that would be driven by increased enrolments; and (iii) the ability of Israeli industry and other institutions to absorb an increased number of graduates</p>	<p>Essential</p>	<p>The management and senior faculty at Afeka continue to monitor any signs of growth and change in the field, for their effect on student enrollment targets, as well as the curriculum of the college. We monitor these changes in order to be prepared for any scenario that develops - one requiring increased student enrollment and/or expansion into new disciplines and sub-disciplines. The intimate nature of the School stemming from the size and special atmosphere at Afeka College are not expected to be negatively impacted by an increase in student enrollment.</p>	<p>Continuous throughout the year</p>

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<p><b>2 - Mission and Goals</b></p>	<p>2. Senior leadership within the College continue to support appropriate growth of the Medical Engineering Department, with particular cognizance of the expected growth of the discipline and recognition of the particular space needs (e.g. wet labs) of the Medical Engineering discipline.</p>	<p>Essential</p>	<p>The senior leadership at Afeka supports the growth of the Medical Engineering School. Each year the head of the School and the senior leadership discuss its special needs, prioritize them and allocate resources accordingly. These steps, which are based on the growth and changes occurring in the industry, entail concrete measures regarding teaching staff, space and expansion of the curriculum.</p>	<p>Continuous throughout the year</p>
	<p>3. If/when additional faculty hiring is carried out, the Department explicitly consider hiring into newer areas, with consideration of: (i) importance to industry; (ii) strengthening the biological expertise in the program and faculty which is somewhat under-represented. An example hiring area is drug delivery and biomaterials.</p>	<p>Important/Advisable</p>	<p>We accept this recommendation and will strongly consider hiring specialists in new areas, especially in biomaterials.  In addition, Afeka recently granted tenure to one of its adjunct faculty, with specialization in biomaterials. During the next academic year, this faculty member will develop additional elective courses in this area.</p>	<p>2018/2019 Academic year</p>

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<b>2 - Mission and Goals</b>	4. More aggressively brand and communicate the unique and valuable niche that the Department of Medical Engineering at Afeka occupies.	Desirable	The unique courses and valuable niche that the School of Medical Engineering at Afeka occupies are well promoted by the school faculty and by Afeka's marketing efforts.	Continuous throughout the year
	5. Continue to work to ensure that research within the Department is possible and encouraged, realizing the limitations imposed by space, faculty time and student access.	Desirable	Despite time and space limitations, Afeka works vigorously to encourage research by: <ul style="list-style-type: none"> <li>• Annually circulating a call to all Afeka faculty to reduce teaching hours to devote time for research.</li> <li>• Annually circulating a call to all Afeka faculty for a sabbatical request.</li> <li>• Encouraging self-improvement among the faculty by attending professional conferences, as well as providing financial support for such activity.</li> <li>• Allocating resources for research assistants.</li> <li>• Encouraging teachers to include students in their research projects.</li> </ul>	Continuous throughout the year

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<b>3 - Organizational Structure</b>	1. The organizational environment not be significantly changed (although we have no indication to suggest that change is in the works).	Essential	We accept this recommendation.	-
	2. A more formal alumni network be established at the Departmental level.	Desirable	We recognize the importance of maintaining contact with our graduates, and for that purpose established an Alumni Unit. The newly appointed director will be responsible for contacting alumni by direct mail, the Web and social networks, inviting them to both professional and social events at the College, for the purposes of keeping the alumni abreast of cutting edge developments in the field and fostering exchanges of information between all parties. All efforts will be made to keep the alumni in contact with the College.	During the second half of the 2016/2017 academic year

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<p><b>4 - Study Program</b></p>	<p>1. The courses on regulatory issues (FDA, clinical trials and ethics) be required for all students. While it is noted that nearly all students take these courses anyway, requiring the courses would be a powerful selling point for the department in marketing itself to prospective students and industry.</p>	<p>Essential</p>	<p>We recognize the importance of the courses on regulatory issues and strongly recommend our students study these elective courses.                      Making these courses required will mean eliminating courses deemed essential to the curriculum, and we have therefore opted to make these very important regulatory courses elective and not required ones.</p>	<p>-</p>
	<p>2. Design be incorporated as early as possible in the curriculum. Students and alumni felt that it was only present in the final year project.</p>	<p>Important/Advisable</p>	<p>We agree that design should be incorporated as early as possible in the curriculum. Some of the third year courses do include design in mini projects, but these projects are not on the same scale as the final project. We will examine how and where design can be incorporated on a larger scale earlier than it is now.</p>	<p>During the second half of the 2017/2018 academic year</p>

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<b>4 - Study Program</b>	3. The curriculum be expanded into areas that align with worldwide trends on medical engineering research and technology development. For example, drug delivery is already an important area, and overlaps with medical device development in several applications (e.g., drug-eluting stents). The additional infrastructure required would not be extensive. In the longer-term, the Department should consider expansion into regenerative medicine (requiring significant expansion of infrastructure).	Important/Advisable	We will examine the implications of entering these new fields, in accordance with our space and budget limitations.	During the second half of the 2017/2018 academic year
	4. The Medical Information Systems stream should either be appropriately resourced within the department, or folded back into a general stream.	Desirable	We accept this recommendation and during the next academic year will hold discussions on the Medical Information Systems stream. This will be done by assigning suitable personnel within the department.	During the second half of the 2017/2018 academic year
	5. While we recognize the difficulties in sequencing pre-requisite courses, the department should make an effort to distribute the student workload more evenly. The second semester of the second year appears to be particularly heavy.	Desirable	The second semester of the second year is indeed particularly heavy and we have already updated next year's study program to more evenly distribute the workload.	Done

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<b>5 - Human Resources/Faculty</b>	1. The College consider nominating faculty for promotion on the Parallel Track, as appropriate. It is not unusual to promote industry-associated faculty on similar tracks at other leading institutes (typically known as "Professor of the Practice"), and these people are not viewed as "second class citizens." Their promotion is typically based on patents, industrial engagement and design outputs.	Essential	Afeka College promotes faculty on the Parallel Track whenever possible. In addition, whenever a faculty member is being promoted on the regular track, the CHE is urged to take into account the heavy teaching load and the absence of graduate students, as well as the number of publications. In any case, the promotion of two senior faculty members to the rank of Professor, on the regular track, was initiated.	-
	2. Faculty be proactively made aware of IP transfer and protection services offered by the College so that if/when patentable discoveries are made, they can be protected in a suitable manner.	Desirable	A procedure for IP transfer and protection services already exists in the College. In addition, a newly formed committee of academics and administrative personnel is currently updating the procedure with the aim of encouraging technology transfer. The updated procedure will be distributed to all Afeka staff.	During the second half of the 2017/2018 academic year



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<b>6 - Students</b>	1. Increase numbers of students only after completion of the strategic plan described above. This may require recruiting additional faculty, and securing the necessary infrastructure (office/lab space etc.).	Essential	As mentioned above the strategic plan is being developed in order to be prepared for the eventuality of growth in student enrollment. Any such growth will be conditioned upon the recruitment of additional faculty and the acquisition of the necessary infrastructure.	-
	2. Adjust the workload for students, so that it is more uniform across the semesters.	Important/Advisable	As mentioned above, we have already updated the study program for the next academic year to distribute the workload more uniformly across semesters. We will continue to examine our study program in that context.	-

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<b>7 - Teaching and Learning Outcomes</b>	1. Within 8 months, add learning outcomes for each course, making sure that a uniform template for syllabi is used.	Essential	There is a uniform format, based on the CDIO format, for all the syllabi in Afeka. The learning outcomes are described in the "objectives" section of each course syllabus. We will recommend the Afeka Teaching Committee consider adding a separate section on learning outcomes to each syllabus.	-
	2. Within 8 months, the Department faculty adopt processes for continually updating learning outcomes in the syllabi for each course. Courses that employ problem-based learning should clearly indicate this in the syllabus, and opportunities to do this should be exploited in all years. Communication of these outcomes to students will enhance the educational process.	Essential	Please see the above response. In addition, as recommended here, we will direct the Afeka Teaching Committee together with course teachers to continually update the learning outcomes in the respective courses, and to communicate them to the students. The courses that employ problem-based learning will clearly indicate this in their syllabus.	During the second half of the 2017/2018 academic year

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<p><b>7 - Teaching and Learning Outcomes</b></p>	<p>3. Consider the use of flipped classroom and other techniques that offer efficient alternatives to lectures.</p>	<p>Desirable</p>	<p>We accept this recommendation and will implement it through the Center for Promoting Teaching and the Center for Promoting Learning, both recently established at Afeka.</p> <p>In addition, we plan to discuss with the Committee of Teaching's Quality the allocation of resources to support innovation in teaching methods. We will encourage providing incentives to faculty implementing innovative methods.</p>	<p>Routinely throughout the year</p>

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<b>8 - Research</b>	1. Secure a dedicated amount of time for lecturers each week to devote to research so that they can stay current with the developments in their field and thus enhance their teaching efforts.	Essential	As explained above, Afeka is making great efforts to encourage research by reducing teaching hours of researchers, so they can devote time to research.	Routinely throughout the year
	2. All lecturers supervise final year projects and publish conference abstracts or research papers at least once every 3 years.	Essential	The faculty members of the Medical Engineering School routinely supervise final year projects. In addition, we will continue to encourage conference abstracts and research papers - it is one of the main goals in our strategic plan.	Routinely throughout the year
	3. Within 12 months, develop an implementation plan to enhance research capabilities (both faculty hiring and lab infrastructure) in emerging areas of biomedical engineering, for example in drug delivery and related biomaterial sciences & engineering.	Essential	As explained above, Afeka recently promoted one of its adjunct faculty with a specialization in biomaterials to a tenured position on the faculty. During the coming academic year, this individual will develop additional elective courses and prepare a proposal for the required lab infrastructure.	During the 2017/2018 academic year

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<b>8 - Research</b>	4. Expand high performance computing infrastructure to support computational solid mechanics and computational fluid dynamics (CFD) teaching and research.	Essential	Afeka routinely invests in expansion of its computing infrastructure performance. Nevertheless, we will examine the possibility to further increase this infrastructure to meet emerging needs.	Routinely throughout the year
	5. Expand collaboration with hospitals and consider writing joint grant applications.	Important/Advisable	Collaboration with several main hospitals already exists at Afeka, including Rabin Medical Center, Sourasky Medical Center, and Sheba Medical Center. Joint grant applications are being submitted with these and other medical centers, and with organizations such as the Medical Corp of the IDF.	Routinely throughout the year
	6. In the longer term, consider expanding the research expertise in more biologically-oriented areas of biomedical engineering and incorporate some emerging research areas such as: biomaterials, tissue engineering, stem cell bioengineering and medical robotics.	Important/Advisable	We will consider expanding the research expertise to the mentioned areas.	-
	7. Secure dedicated research lab space and infrastructure.	Desirable	Space limitations at the present time require the use of labs for teaching and for research. The new campus being planned for Afeka will provide more space for research labs and infrastructure.	-

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<b>9 - Infrastructure</b>	1. Since the space for offices, laboratories and other infrastructure appears to be fully used at present, recruitment of additional faculty must be accompanied by securing additional space.	Essential	The Afeka's management is negotiating to secure additional space in advance of the beginning of the next academic year. Recruitment of additional faculty will of course be contingent upon securing the required additional space.	-

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<b>10 - Self Evaluation Process</b>	1. Once the Departmental Strategic plan is fully developed, develop an effective evaluation process that will benchmark Departmental progress against the Strategic plan. Perhaps this can be done as part of the annual Departmental performance review.	Essential	The evaluation process is done annually and includes discussion of the school's strategic plan.	-
	2. Establish an External Advisory Board.	Desirable	The Medical Engineering School encourages meetings with the medical engineering industry through visits of staff and students. During these meetings, discussions are held on the study program and the desired student profile. In addition, the School's teaching committee continuously evaluates the study program and the results of updates to it.	-