

**Response to the Committee for the Evaluation of Chemistry Studies**  
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The Schulich Faculty of Chemistry response to the Evaluation Report consists of a summary of the faculty response to each recommendation raised by the committee, point by point, in the order of their appearance in the evaluation report. Our response is divided into the same categories as they appear in the Evaluation Report: (1) undergraduate program, (2) graduate program, (3) faculty, (4) research and (5) resources and facilities. Each recommendation is underlined, followed by our response.

The Schulich Faculty of Chemistry would like to thank the committee chaired by Prof. Richard Eisenberg for their recommendations. We believe that on the whole the implementation of most of their recommendations will improve the teaching situation at both undergraduate and graduate levels. We believe that implementation of their recommendations will require a combined effort of both the faculty and Technion management.

**Undergraduate Program**

1. Modify the undergraduate program to encourage undergraduate research during the academic year. Greater emphasis in the first-degree program on undergraduate research in the curriculum.
  - a. The Faculty agrees with the committee that undergraduate students should obtain more experience in how research is performed. To this end, the faculty will continue to encourage the undergraduate students to perform research via at least one of three routes:
    - (1) Students with the appropriate grade average will be encouraged to take the course "Research Project in Chemistry" - 124353. This course presently awards the student with 4 credit points. The Faculty has decided to change this to 6 credit points, as this reflects the true expenditure of time by the students. The Faculty predicts that this will encourage more students to take this course. The Faculty will also encourage all faculty members to suggest more research projects.
    - (2) Provide funding for student research. The Faculty already has certain funds (the Roth Scholarship) but will actively seek additional funds to be earmarked for undergraduate research projects. The Faculty will also seek funds for the procurement of the materials needed for student research. The Faculty recognizes that many of the research labs are underfunded and providing research experience to undergraduate students should not only be the faculty members' responsibility.
    - (3) The Faculty will actively promote the institution of a 4-4.5 year "direct to M.Sc." track for students of appropriate capabilities. A major

portion of the credits required in this track will be performance of research, leading to a M.Sc. thesis.

- b. The Faculty recognizes that research projects require on-hand supervision by graduate students who are already overloaded with TA responsibilities. The Faculty expects the Technion support in compensating the graduate students for their efforts and assuring that these responsibilities will not be in addition to other teaching duties (see below).

2. Introduce more scholarships for B.Sc. students to enable summer undergraduate research.

See response 1.a.(2)

3. Training and supervision of teaching assistants beyond existing workshops must be done to make the TA's as effective as possible.

- a. The Faculty recognizes the importance of training TA's and will stress this to the faculty members who are academically responsible for their courses.
- b. The Faculty will request funds from the Technion to procure a Ph.D. level (non-tenure track) position to provide training for TAs that teach in the teaching labs. Such a person will not only be able to ensure that the TAs understand the material at a level that they can then teach to undergraduates, but will also help the TAs pedagogically. This person will also provide better synchronization between the TAs, the faculty members, the teaching office (that determines the TAs teaching schedules) and the lab staff members.

## Graduate Program

1. Use the "Direct to Ph.D." track at the start of graduate studies.

- a. A majority of the faculty members believe that the present method of accepting students to graduate studies is preferable to the suggestion that all students be accepted as doctoral candidates. The Faculty already supports the moving of as many students as possible from the M.Sc. track to the "direct-Ph.D." track, but only after they have proven themselves in at least a year of graduate studies and research.

2. Reduce heavy teaching loads of M.Sc. and PhD students while maintaining or increasing their levels of support.

- a. The Faculty has already taken steps to lower the number of hours graduate students perform TA activities. Lowering the teaching load results in a lack of sufficient TAs for all of the Faculty's courses.
- b. The Faculty will actively look into the possibility of using outside TAs for its service courses. Since other faculties do not cover all basic material in Chemistry, the Faculty expects to be challenged to ensure that outside TAs have a sufficient academic level for teaching chemistry in these courses.
- c. The Faculty will actively seek out further Technion support for graduate scholarships, so that the decrease in TA hours does not financially harm our graduate students.

3. Sufficient elective courses that are relevant to particular graduate research programs should be offered.

- a. The number of elective graduate courses has steadily increased over the past few years, and will continue to grow as new faculty members are recruited. All faculty

- members teach at least one advanced course.
- b. We will increase the number of graduate courses offered by external lecturers from relevant industry and academic visitors.
4. Career counseling for graduate students at all levels is recommended.
    - a. The Faculty agrees that students, both undergraduate and graduate, should have more knowledge as to their possibilities of future employment. Such information will be provided by inviting more seminars by members of the chemical industry as well as reopening a course in “Chemistry in Industry”.
    - b. We will plan for visits to local industries by our graduate students.
  5. Graduate student admission should not be linked to financial considerations of any specific faculty member.
    - a. This is a desirable situation, but since the Technion funds are insufficient to support all graduate students, students’ fellowships depend on contributions from their supervisor. Since graduate students are legally affiliated with the Technion Graduate School, the faculty has no authority to guarantee any financial support beyond what is required by Graduate School regulations. The Dean can provide short-term loans to a faculty member that already has a graduate student at a certain level of support, due to transient lack of funds. A Faculty Council decision already stipulated that all faculty members are expected to provide some of the student’s fellowship funding, depending on the student’s grades.
  6. Ph.D. students should receive feedback more often from their Review Boards throughout their program of study.
    - a. The Faculty has discussed the possibility of establishment of a “Graduate student review board” for each graduate student. The Faculty council does not believe that establishment of such a board will be truly effective in its proposed goal of following the student’s progress, and thus has suggested not to establish such review boards. The onus of providing feedback to the graduate students remains the responsibility of the supervisor.
  7. M.Sc. and Ph.D. students should, upon admission to their programs, be guaranteed in advance a minimal level of financial support for a set number of years.
    - a. Since graduate students are legally affiliated with the Technion Graduate School, and this is already a Graduate School requirement, subject to academic conditions, there is nothing new to implement.
  8. There should be financial support and flexibility in academic deadlines for female students who have children.
    - a. The Technion already provides support for female students who give birth during their graduate studies. The Faculty has no authority to provide any social benefits or to set criteria for such benefits.

## Faculty

1. Resources and space to allow the hiring of 6 new faculty members over the next 5 years should be allocated.
  - a. The Faculty agrees and will actively work with the Technion administration to provide the financial support needed to provide these resources and space.
2. Greater effort should be made in looking for new faculty members in the international

community.

- a. The Faculty agrees that such recruitment can be beneficial, within the labour laws of the State of Israel and the requirements of the Technion (ability to teach in Hebrew).
3. Pro-active recruitment of female faculty members should be undertaken.
  - a. The Faculty agrees and has recently recruited two new female faculty members. The Faculty will actively seek out extra-ordinary female and other graduate students (from populations not represented in the faculty) and seek to provide guidance on the performance of meaningful post-doctoral research in Israel that can lead to recruitment.
4. Greater mentoring of teaching assistants by senior faculty should be done.
  - a. See point 3 a. In “Undergraduate program”.

## **Research**

1. The research activities at the Institute and their external presentation are truly excellent. The only recommendation is to continue in the same manner.
  - a. The Faculty thanks the review committee for their very positive assessment of the level of research being performed at the Faculty. The Faculty will continue to strive to provide the best infrastructure possible to enable the present and future faculty members all of the needed requirements to continue to perform its research at this high level.

## **Resources, Facilities**

1. Maintain high-level support staff for shared equipment (e.g., following retirements).
  - a. The Faculty agrees that it is paramount that the Technion continue to provide funding for the maintenance of high-level support staff.
2. Teaching and research labs should be given priority regarding available space.
  - a. The Faculty agrees with this stipulation. It is in the process of moving and centralizing space used for offices, in order to free up space for additional research labs.
3. Funds for mid-career purchases of new equipment and lab renovation should be made available when needed. Such a program should be implemented and coordinated through CHE, ISF and the Technion.
  - a. The Faculty will to continue to emphasize to its faculty members to submit proposals for infrastructure (equipment and manpower) and will strive to obtain matching funds typically needed for such procurement.