

14 November 2019

Response to the Evaluation Report of Physics at the Open University of Israel

We thank the International Committee for the Evaluation of Physics Departments in Israel for its hard work and dedication in writing this detailed report. We find the report very positive and the criticism to be useful, and we are happy that we have the opportunity to offer our responses and comments about the report. The latter are organized according to the order of the Committee's recommendations.

1. Essential:

- **Reevaluation of the career path for course coordinators:** The course coordinators provide the primary point of interaction for students enrolled in the current degree programs at OUI. At present, they feel over-burdened, and under-appreciated, with minimal authority to shape the structure of the courses they are teaching. We recommend that the OUI rethink their role generally, potentially providing them with more autonomy, and greater opportunities for advancement.

We agree that it is essential to improve the career path of course coordinators. This is, however, a university-wide issue which is not specific to our department, and with significant financial implications, so it is not easy to implement. Nonetheless, it will be seriously considered. We try to involve course coordinators in the development of new courses and in the updates to their courses whenever possible, which is the best way to play a role in shaping the courses. However, they are not always interested, since this is time consuming. In fact, after a course is completed, its academic supervisor does not have much more freedom than the coordinator in shaping the course. The reason, of course, is our rigid system of teaching with the text (or recorded lectures) as the main component of the course. We will also try to give the course coordinators more autonomy, and reduce the overall bureaucracy that is involved in making changes and updates to the courses. Finally, a physics graduate program at the OUI (see our answer to the next recommendation) could significantly improve the coordinators' employment structure: (1) Some of our graduate students may be employed part time as tutors or as course coordinators in entry-level courses, thereby reducing the workload of the existing coordinators. This will also increase the percentage of coordinators who are engaged in active research, and add some flexibility and mobility that are, at the present time, insufficient. (2) Current coordinators holding a PhD may be "upgraded" (also financially) to be involved in the graduate program as coordinators of graduate courses (e.g. of online courses; see part 3 of our answer to recommendation 2) or as teaching assistants, and may even be involved in the ongoing research, and partially supervise MSc students. All of these new avenues will provide greater opportunities for the advancement of course coordinators and help make them feel more appreciated. Obviously, these positive effects on the course coordinators are not among the main reasons for the MSc program, but would be a very fortunate byproduct.

2. Important:

• **Abandon plan for MSc in physics:** While the establishment of an MSc program in physics at OUI could have significant benefits for the OUI faculty and for the university, we remain unconvinced that the demand is sufficient to justify the establishment of new degree program at this time. There is no evidence that the enrollment in such a program would comprise more than a small number of students, and opportunities for such students already exist in the graduate programs at other universities.

We strongly disagree with this recommendation for the reasons detailed below. In fact, we are convinced that a graduate program is essential for the healthy development of the physics group at the OUI, as in any other university, and that abandoning this plan would have devastating and irreparable implications that would set us back for many years and also greatly damage the existing BSc programs. We therefore strongly urge the committee to reconsider this recommendation, which concerns the single issue that we regard to be most important in the whole report, since it significantly affects our whole physics group and all of its activities.

Our reasoning is as follows:

1. First, we would like to stress again the importance of an MSc program for in-house research at the OUI, for the research involvement of the teaching staff that would further enhance the quality of teaching in the BSc programs, and for the overall development of the physics group at the OUI. In particular, it would make a big difference in the recruitment and retainment of high-quality faculty members who are at the heart of the physics group. The current high quality of the faculty is a result of fortunate circumstance, as two of the three senior faculty members returned to Israel for personal reasons at an advanced stage in their careers. The third will retire in two years and we are currently recruiting a replacement. It will be very difficult to recruit an excellent candidate with no clear prospects for building a research critical mass and an MSc program. In such a situation, we may even face difficulty retaining the others. This possibility is not hypothetical, but quite realistic, noting the constant outflux of good faculty members, even from OUI departments with existing MSc programs, such as computer science.
2. The argument of insufficient student demand calls for some clarifications:
 - A. We will target not only OUI BSc graduates (whose numbers have been significantly increasing in recent years; physics course registrations grew by 37% in the 2018/19 academic year compared to 2016/17 – the last year in our report), but also graduates of other universities, so a target of ~5 new MSc students per year within a few years after the start of the program is realistic.
 - B. Since the number of senior faculty in the physics group at the OUI is significantly smaller than in physics departments at other Israeli universities, the absolute number of students should instead be compared to those in astrophysics and cosmology in other Israeli universities. Alternatively, one could compare the mean number of MSc students per senior faculty member. Both of these metrics would be quite similar to other Israeli universities.
3. It is true that an OUI MSc program would be less unique than our BSc program, and taught in a more traditional way. However, we think that this should not be held against such a program. Indeed, the OUI has succeeded above all expectations in providing high-level distance learning undergraduate programs to large numbers of students. We (and faculty at other departments at the OUI as well) believe that this successful distance learning approach cannot be replicated in a graduate program – particularly in the exact sciences and natural sciences. The evaluation report itself states this in a different way: **“We have become strongly convinced that the unusual character of the OUI educational experience is crucial for certain kinds of students... . When a**

student moves on to graduate work, on the other hand, the nature of their engagement changes, and most of his or her effort ... is not devoted to enrollment in lecture courses, but rather to less formal interactions with faculty in a research setting." Indeed, we envision a mainly classical type of MSc program, where students take most of the courses in a typical way, interacting directly with their teachers. A small fraction of the MSc courses may be online courses, guided reading courses or joint courses developed in collaboration with other universities (either as online courses or asynchronous video-based courses). Still, the students will need to spend a large part of their time in classes and in their offices on our main campus, interacting among themselves, with postdocs in the physics group, with their advisors and teachers, and possibly with their BSc students if employed as course coordinators or tutors. Nevertheless, one unique aspect of our proposed MSc program is that it will be a focused program in the specific research areas of the existing physics faculty members – relativistic gravity, cosmology, and astrophysics. Such a focused program has no parallel today in Israel and will attract students who are interested in the specific research directions of the physics faculty, and even some who would otherwise leave Israel for graduate studies in their preferred field of interest.

4. The argument that the OUI does not need an MSc program because its BSc graduates can go on to do an MSc elsewhere could be invoked for any existing MSc program in Israel. One could hypothetically close down half of the physics masters programs in Israel and the Israeli student body would still have enough choices in the remaining MSc programs. However, maintaining different programs increases the choice and variety of topics, to which our proposed program would also contribute.

3. Important:

- Increase interaction between faculty and students: While the faculty in physics clearly play crucial roles in constructing and implementing the physics courses, their contact with students appears to be minimal. We believe that this separation is unhealthy. Faculty must interact more frequently and more directly with the student population.

We agree that it is important to increase interaction between faculty and students. However, we would not describe the interaction as "minimal." Senior faculty interact with students through the counseling process, during which students receive general advising at the beginning of their studies, and direction as to their next steps in their programs as they progress. More importantly, senior faculty members serve as advisors to students who carry out projects and submit seminar papers as part of their curriculum. Still, the current interaction is insufficient, both due to the independent-learning nature of BSc studies at the OUI, and the fact that most tutorials are held outside our main campus in Ra'anana. A third factor is that the faculty members are overloaded with course development and administrative duties. The latter would be significantly alleviated if more physics faculty members could be recruited, as we suggest in support of an MSc program. This would also enable more student involvement in research activities (e.g. research projects), which also involves direct interaction with faculty, and encourages interactions in order to seek potential MSc students or an advisor. Finally, we plan to institute periodic meetings between physics students and faculty, beginning with the next academic year, in order to facilitate and actively encourage more interaction between them.

4. Advisable:

- More open-ended components of student labs: The student lab exercises are overly cookbook, and don't appear to offer enough opportunities for students to engage with the equipment and figure out for themselves how to construct an experiment. We believe that more attention to opportunities for student creativity could be incorporated into the lab courses.

We already have some freedom in the construction of the experiments in the advanced physics labs, but we will definitely try to increase such freedom as much as possible, and try to avoid overly cookbook types of experiments. It is worth noting in this context, that the opportunities for student-initiated experiments at the OUI are somewhat less extensive than at other Israeli universities, since the latter have research labs which provide much of the infrastructure on which advanced student-initiated experiments can be performed, including a larger amount and diversity of lab equipment from research labs, and shops for repairing, adjusting and building tailored equipment.

5. Advisable:

- Outreach to the periphery: The student populations appears to be overly concentrated in the center of Israel, where other universities provide ample opportunities for higher education in physics. Given its unique approach, OUI is in an ideal position to attract students from the periphery of the country. However, we did not see much evidence that they are fulfilling this role, especially for physics.

We will try to improve the availability of tutorials in geographically peripheral regions, as well as increase the OUI's targeted marketing efforts in these regions, for the exact sciences in general, and physics in particular.

Final comment:

The Open University is quite unique in the Israeli academic scene and even worldwide. It is therefore difficult to learn in-depth in a short time period exactly how it operates and the exact importance and implications of each role within its nonconventional structure. We regret that we did not succeed in conveying this better in our report and during our meetings. We hope that this response clarifies the situation and, most importantly, the essential necessity for establishing an MSc physics program, in order to maintain healthy and lively progress in the research and teaching activities of the OUI physics group.

We therefore strongly urge the committee to reconsider the recommendation against opening a focused MSc physics program at the OUI.

Sincerely,

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