**Committee for the Evaluation of Biology/Life Sciences Study Programs**

# Open University

## Life Sciences Teaching Program

## Department of Natural Sciences

## Evaluation Report

**September 2010**

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## Chapter 1 - Background

At its meeting on October 23, 2007 the Council for Higher Education (CHE) decided to evaluate study programs in the field of Biology/Life Sciences during the academic year 2007-2008.

Following the decision of the CHE, the Minister of Education, who serves ex officio as the Chair of the CHE, appointed an Evaluation Committee for the evaluation of the academic quality of biology/Life Sciences studies in Israel. The Committee consists of:

- **Prof. Michael Levitt, Department of Structural Biology, School of Medicine, Stanford University, USA - Committee Chair**
- **Prof. Ueli Aebi, M.E. Muller Institute for Structural Biology Biozentrum, University of Basel, Switzerland**
- **Prof. Yigal Cohen, Faculty of Life Sciences, Bar Ilan University, Israel**
- **Prof. Nicole Le Douarin, Institute of Embryology, College de France, France**[1]
- **Prof. Shlomo Rotshenker, Department of Medical Neurobiology, The Hebrew University Medical School, Israel**
- **Prof. Daniel Simberloff, Department of Ecology and Evolutionary Biology, University of Tennessee, USA**

**Ms. Marissa Gross- Coordinator of the Committee on behalf of the CHE.**

Within the framework of its activity, the Committee was requested to submit the following documents to the CHE:

1. A final report for each of the institutions, which would include an evaluation of Life Science study programs, the Committee's findings and recommendations.
2. A general report regarding the status of the evaluated field of study in Israeli institutions of higher education.
3. Recommendations for standards in the evaluated field of study.

The Committee's letter of appointment is attached as **Appendix 1**.

The first stage of the quality assessment process consisted of self-evaluation, including the preparation of a self-evaluation report by the institutions under evaluation. This process was conducted in accordance with the CHE's guidelines as specified in the document entitled "The Self-Evaluation Process: Recommendations and Guidelines" (October 2007).

[1] Prof. Le Douarin was unable to attend the second round of visits due to personal reasons.

## Chapter 2 - Committee Procedures

The Committee held its first meetings on May 8, 2009. At this meeting committee members were given an overview of higher education in Israel and a description of the Israeli CHE. They also discussed Biology/Life Sciences study programs in Israel and fundamental issues concerning the committee's quality assessment activity.

During May 2009 Committee members conducted full-day visits to two of the eight institutions whose Biology/Life Sciences study programs the committee was requested to examine: Hebrew University in Jerusalem and Tel Aviv University. The committee visited the remaining six institutions, the Ariel University Center, Bar Ilan University, the Open University of Israel, the Weizmann Institute of Science, the Technion- Israel Institute of Technology, and Ben Gurion University during March 2010.

During these meetings, the Committee met with the relevant officials at each institution, as well as with faculty members, students and alumni, and also conducted a tour of the campus.

***This report deals with the Biology/Life Sciences Life Sciences Teaching Program of the Department of Natural Sciences at the Open University of Israel.***

The Committee's visit to the Open University took place on March 9, 2010.

The schedule of the visit, including the list of participants representing the institution, is attached as **Appendix 2.**

The members of the committee thank the management of the institution and the Faculty of Life Sciences Study Program for the self-evaluation report and for the hospitality offered to the Committee during its visit.

# Chapter 3 - Evaluation of Biology/Life Sciences Study Programs at the Open University*

## 3.1 General Background

The Open University in Israel was established in 1974 as an institute of higher education based on distance learning. In the 2006-2007 academic year, 42,782 students were enrolled in undergraduate courses and 3,208 students in graduate programs. The majority of these students are not enrolled full time, but it is estimated that these numbers are comparable to 17,417 undergraduate students and 1,286 students at a conventional university. The Department of Natural Sciences was established in 1997 and offers a BSc degree in Natural Sciences and a MA degree in Biological Thought. In 2006-2007, 1,211 students were registered in the Natural Sciences undergraduate program and 16 students in the MA program.

## 3.2 Executive Summary

The Open University of Israel (OUI) is distinct from all other universities in its mission, teaching methods and structure. The OUI fulfills a vital and unique role by providing an opportunity for academic studies to sectors in the public that otherwise would not be able to take advantage of higher education. Admission is open to all and without any prerequisites (e.g. matriculation). Teaching is based on a combination of distance learning (e.g. printed and electronic books; course websites), tutorials which are frontal (held on main campus and 55 study centers distributed throughout the country) or interactive (by telephone with the course website), and laboratory classes (also held on the main campus).

Faculty members establish courses and perform administrative functions, course coordinators execute teaching and assist students, tutors also assist students. Faculty, course coordinators and tutors comprise a highly dedicated group and students express high levels of overall satisfaction.

The most critical problem that we encountered is that course coordinators - the back bone of teaching - have no job security as they are hired per semester and further have no academic status although most are PhDs. Indeed, course coordinators justifiably expressed much frustration to our committee. We believe that the OUI, with the help of the Council for Higher Education, should provide course coordinators with reasonable job security and a special academic status that will symbolize the critical role they play in the unique teaching methods of the OUI.

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* *This Report relates to the situation current at the time of the visit to the institution, and does not take account of any changes that may have occurred subsequently. The Report records the conclusions reached by the Evaluation Committee based on the documentation provided by the institution, information gained through interviews, discussion and observation as well as other information available to the Committee.*

## 3.3 Goals and General Situation

The Open University of Israel (OUI) is distinct from all other universities in its mission, teaching methods and structure. The OUI fulfills a vital unprecedented role by providing an opportunity for academic studies to sectors in the public that otherwise would not pursue higher education. Admission is open to all without prerequisites (e.g. matriculation).

## 3.4 Curriculum

Strengths:

- Curriculum is well rounded and diversity of courses is adequate.
- Several ecology courses, including traditional field courses, at the undergraduate level. However, these are undergraduate courses at a rather low level; they would be excellent preparation for more advanced courses in these fields, and in particular ecology and biodiversity, at either Open University or other universities (to the limited extent that such courses exist elsewhere in Israel), but we have no statistics on the extent to which OU graduates pursue their studies further in these areas.

Weaknesses:

- There is no limit to the number of years for completion of studies for a BSc degree; the average duration is 7 years. Some courses may be outdated by the time of graduation.
- Courses are not updated as frequently as required in rapidly developing fields.

Recommendations

- Restrict the maximum duration for a BSc degree to 7 years.
- Update courses more frequently.

## 3.5 Teaching and Learning

- OUI courses are based on printed text-books written either by the Faculty or by scholars from other universities. In some courses, textbooks either in English or translated into Hebrew are accompanied by study guides written by OUI Faculty. These study guides contain self-study tools. In advanced courses, materials include original review articles and research papers. Recently, electronic books have also being introduced.
- Technology-based learning materials (e.g. course website, DVDs and multimedia CDs containing courseware, virtual laboratories, simulations, recorded lectures, films and animations).
- Each course has a course coordinator whose task is to hire and supervise tutors, write assignments and exams, assist students and maintain the course website. Most course coordinators hold a PhD degree (90%); the remainder have an MSc degree.
- Websites include discussion forums that enable interaction between students and the course team, personal notebooks, chat rooms, an online assignment system, additional learning materials such as

PowerPoint presentations, demonstrations, simulations, virtual labs, and a tool that enables students to perform collaborative work.

- Each course has tutors that assist students. Distance assistance is by phone and via the website. Frontal assistance takes place on main campus and 55 study centers distributed throughout the country. Groups of students meet with tutors either once a month or weekly. Students value frontal tutorships as the human contact is highly appreciated.
- The lab classes held on the on main campus are of high standard.
- Exams are given at main campus and at the study centers.

Weaknesses:

- Courses are not updated as frequently as is required in rapidly advancing fields.
- Courses are opened on-demand; a minimal number of students need to be registered. Therefore, some courses may not be available on a yearly basis. This may increase the time needed to complete studies for a degree.
- Students enroll in the study program after they have already taken several courses without prior consultation. Consultation regarding the study program begins after enrollment.

Recommendations:

- Increase the number of Faculty to keep up with the need to update existing courses and establish new courses.
- Involve course coordinators in updating existing curses and establishing new courses.
- Outsource the updating and establishment of new courses as was done for writing and translating text-books.
- Implement a combination of the above recommendations.
- Consider commitment to open core courses once a year in a specified semester.
- Offer consultation to students who are considering the study program when they enroll in their first course.

### 3.6.1 BS Students

Strengths:

- Open admission without pre-requisites (e.g. matriculation) provides a chance for higher education to all. For example, students who are not qualified to study Life Sciences in other universities can graduate from OUI and then be accepted to study advanced degrees including medicine.
- Distance learning makes higher education accessible to those who cannot afford studying at “regular university campuses” or cannot move to be close to a university campus because they live in the periphery, abroad or serve in the army.
- Students do not enroll in and do not pay for a rigidly constructed teaching program. They register and pay for individual semester long courses. Thus the pace of studies for a degree is controlled by the student. It is of great advantage to those who are committed to a job and cannot be “full-

time" students and those who are not certain whether or not to study for a degree. Nevertheless, prolonging the duration of studies without limit poses a problem (see above).
- Students can move to traditional universities to complete their studies and be credited for courses taken in OUI.
- Individual courses are structured; students have specific scheduled assignments to fulfill. This is a great help to some students who "get lost" in regular universities (according to a testimony by one of the students).
- Provide stipends for students from the periphery.

Weaknesses:
- Courses are opened on-demand. Thus some may not be available on a yearly basis if only few students register. This may prolong completion of studies for a degree.

Recommendations:
- Consider commitment to open core courses once a year in a specified semester.

### 3.6.2 MA Students/Program

The OUI was authorized to offer a Master's degree (MA) in Biological Thought in 2000. The program, unique in Israel, is a combination of theoretical biology, philosophy of biology and bioethics. Students come from two disciplines: biology and philosophy. Acceptance to the program requires that students take qualifying courses in the discipline with which they are not familiar and undergo an interview by an admittance committee.

The program is structured to last the duration of 3 years, which is in contrast to the BSc program in Life Sciences. Students can choose between thesis and non-thesis tracks.

The MA students we met were very excited about the program that seems to offer something very special.

## 3.7 Human Resources: New Junior Faculty

Strengths:
- Dedicated Faculty, course coordinators and tutors.
- Most course coordinators (90%) have a PhD degree and others an MSc degree.
- Most tutors (71%) have a PhD degree and others an MSc degree.

Weaknesses:
- There are currently five senior Faculty members. This number is too few to cope with the requirements of updating courses and establishing new ones.
- Course coordinators have no job security although they are the back bone of teaching. The current situation is that they are hired only when a course is opened (i.e. if sufficient students register and per semester).

- Course coordinators have no academic recognition although their contribution to teaching is essential; 90% of them have a PhD degree and the remaining 10% an MSc degree.
- There is no mechanism that enables course coordinators to update their own knowledge which could be very beneficial.
- Tutors have no job security and payment is poor (on an hourly basis with no social benefits attached) yet they are the only ones performing traditional teaching which is highly appreciated by students and is also one of the great strengths of the OUI as a whole.

Recommendations:

- Increase the number of Faculty to 7 or 8.
- Provide some form of job security to course coordinators (e.g. multi-year contracts).
- Establish a special academic status that honors the course coordinators without additional financial obligations to the OUI.
- Establish a mechanism that will enable course coordinators to update their knowledge and experience and to be involved in research (e.g. via a mini sabbatical used to take advanced courses and enroll in research in other universities).
- Provide some form of job security to tutors (e.g. year contracts) as well as better payment (e.g. include social benefits).

## 3.8 Infrastructure

Strengths:

- Publishing, translating, printing and distributing by mail of huge numbers of textbooks and other learning material.
- Facilities for distance and electronic learning; course websites and classes for online teaching; studios where lectures are recorded.
- Laboratory classes.

## 3.9 Research

Research in OUI is not comparable to that conducted in “traditional universities”. There are no research laboratories on OUI campus. Faculty members conduct research in Tel-Aviv University and the Weizmann Institute by renting lab space and/or by collaborating with Faculty of the host institution. There is no critical mass of researchers in one research field but this may not be needed at the OUI for the following reasons: (a) research is not conducted at the OUI campus and each OUI Faculty member interacts with research peers at the host research institution; (b) the small number Faculty is required to cover a wide range of teaching disciplines, rather than critical masses of research strength.

Table 1: Quantitative Analysis of the Faculty of Life Science at The Open University

| Topics Evaluated (CHE Appendix) | Evaluation Criteria | Values | Topics Evaluated | Evaluation Criteria | Values |
|---|---|---|---|---|---|
| The Academic Faculty | Number of faculty (PI): All | 5 | Research Papers | Period Analyzed (2004-2008) | |
| | Lecturers | 0 | | Total Self-reported | 104 |
| | Senior Lecturers | 3 | | Total Web of Science | 9 |
| | Associate Profs. | 1 | | Number of Papers per Faculty | 2.2 |
| | Full Profs. | 1 | | Number of Citations per Faculty | NA |
| | Active Emiriti | NA | | Annual Publications per PhD/yr | NA |
| | New faculty in last five years | 1 | | Annual Faculty Publications /year | 0.44 |
| | Retired faculty in last five years | 2 | Impact | Number Papers | 9 |
| The Students | Number of students: Total (2008) | 140 | | Number Citations | NA |
| | BSc (2006) | NA | | Total Impact Factor | NA |
| | BSc (2010) as percent of 2006 | NA | | Total Impact Factor/PI | NA |
| | BSc (2008) | 140 | | Papers with 2 or more PIs | NA |
| | MSc (2008) | 0 | Total Support ($x1000) | Total Grant Funds | 816 |
| | PhD (2008) | 0 | | Total Graduate Student Funds | 1,020 |
| | Postdocs (2008) | 0 | | Total Research Funding | 1,836 |
| Student / Faculty Ratios | BSc students per faculty (2008) | 28.0 | Resource/ Faculty | 5 Year Total Grants per faculty | $163,200 |
| | MSc students per faculty (2008) | 0.0 | | 5 Years PhD Funds per faculty | $204,000 |
| | PhD students per faculty (2008) | 0.0 | | Total Research Funding | $367,200 |
| | Postdocs per faculty (2008) | 0.0 | | Lab. Space per faculty (m2) | NA |
| | Ratio of TAs / Faculty | NA | Effectiveness | Cost of a Paper | NA |
| The Study Program | Number of Teaching Assistants | NA | | Cost of a Citation | NA |
| | MSc Student Stipend (NIS/month) | NA | | Relative Cost of Paper | NA |
| | PhD Student Stipend (NIS/month) | NA | | Relative Cost of a Citation | NA |

## Chapter 4 – General Recommendations and Timetable

Strengths:

- Open access with no pre-requisites to all for the BSc study program.
- Distance self-learning is combined in a very effective way with distributed teaching at 55 country-wide centers.
- Flexible self-controlled pace of studies is possible.

Weaknesses and Recommendations:

- Provide job security and academic status to course coordinators. They are the back-bone of teaching.
- More frequent updating of courses.
- Provide some mechanism for course coordinators to update their training.
- Provide some form of job security to tutors.
- Restrict the maximum duration for completion of studies for a BSc degree to 7 years.

**Signed by:**

Prof. Michael Levitt, Chair

Prof. Ueli Aebi

Prof. Yigal Cohen

Prof. Shlomo Rotshenker

Prof. Daniel Simberloff

# Appendix 1: Letter of Appointment (Sample)

מדינת ישראל

STATE OF ISRAEL

**Minister of Education**

May 6, 2009

Prof. Michael Levitt
Department of Structural Biology,
School of Medicine, Stanford University,
USA

Dear Professor Levitt,

The State of Israel undertook an ambitious project when the Israeli Council for Higher Education (CHE) established a quality assessment and assurance system for Israeli higher education. Its stated goals are: to enhance and ensure the quality of academic studies; to provide the public with information regarding the quality of study programs in institutions of higher education throughout Israel; and to ensure the continued integration of the Israeli system of higher education in the international academic arena. Involvement of world-renowned academicians in this process is essential.

This most important initiative reaches out to scientists in the international arena in a national effort to meet the critical challenges that confront the Israeli higher educational system today. The formulation of international evaluation committees represents an opportunity to express our common sense of concern and to assess the current and future status of education in the 21st century and beyond. It also establishes a structure for an ongoing consultative process among scientists around the globe on common academic dilemmas and prospects.

I therefore deeply appreciate your willingness to join us in this crucial endeavor.
It is with great pleasure that I hereby appoint you to serve as Chair of the Council for Higher Education's Committee for the evaluation of Life Sciences/ Biology Studies.
The composition of the Committee will be as follows: Prof. Michael Levitt- Chair, Prof. Ueli Aebi, Prof. Yigal Cohen, Prof. Nicole Le Douarin, Prof. Shlomo Rotshenker and Prof. Daniel Simberloff.
Ms. Lilach Weisz will coordinate the Committee's activities.

In your capacity as a Chair of the Evaluation Committee, you will be requested to function in accordance with the enclosed appendix.

I wish you much success in your role as a Chair of this most important committee.

Sincerely,
Gideon Sa'ar
Gideon Sa'ar
Minister of Education
and Chairperson of the Council for Higher Education

*Enclosures:* Appendix to the Appointment Letter of Evaluation Committees
cc: Ms. Riki Mendelzvaig, Secretary of the Council for Higher Education
Ms. Michal Neumann, Head of the Quality Assessment Unit
Ms. Lilach Weisz, Committee Coordinator

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# Appendix 2: Schedule of The Open University On-Site Visit

**The Committee for the Evaluation of Life Sciences Study Programs - Schedule of site visit at the Open University Campus, Raanana**

**Tuesday March 9, 2010**

| Time | Subject | Participants |
|---|---|---|
| 09:00-9:45 | **Opening session with the heads of the institution and the senior staff member appointed to deal with quality assessment** | |
| | President | Prof. Hagit Messer-Yaron |
| | Vice President for Academic Affairs | Prof. Judith Gal-Ezer |
| | Dean of Academic Studies | Prof. Sonia Roccas |
| | Dean of Academic Development and Educational Technology | Prof. Yoav Yair |
| | Head of the Evaluation Department | Dr. Relly Brickner |
| | CHE Quality Assessment Coordinator | Dr. Ronit Bogler |
| | Chair, Natural & Life Science Department (NLS) | Prof. Itzhak Dotan |
| | Head, M.A. Biological Thought program (BT) | Prof. Simona Ginsburg |
| | Head, Life Sciences Group (LS) & Dean of Research | Prof. Anat Barnea |
| | Director General | Mr. Amit Streit |
| 9:45-11:00 | **Meeting with the academic Heads and Senior Faculty of the Department** | Prof. Itzhak Dotan (Chair, NLS), Prof. Anat Barnea (Head, LS Group), Prof. Simona Ginsburg (LS & Head, M.A. in BT), Prof. Miriam Souroujon (LS), Dr. Ruth Arav (LS), Dr. Ronit Weisman (LS) |
| 11:00-11:30 | **Meeting with representatives of relevant departmental committees and Senior Faculty:**<br>**Natural & Life Sciences Committee (NLSC)**<br>**Study Program Approval Committee (SP)**<br>**Accreditation Committee (ACCR)**<br>**Academic Appointment Committee (APP)** | Prof. Itzhak Dotan (Chair, NLS), Prof. Anat Barnea (Head, LS Group), Prof. Simona Ginsburg (LS & Head, M.A. in BT), Prof. Miriam Souroujon (LS & APP), Dr. Ruth Arav (LS), Dr. Ronit Weisman (LS), Dr. Yosef Verbin (Chair, NLSC), Prof. Eli Levin (Chair SP), Dr. Aviad Bar-Haim (Chair ACCR) |
| 11:30-12:15 | **Tour of campus: Multimedia studios, Library, Computer Class, Auditoria, Senate Hall, Lamda Bookstore, Laboratories** | Guided by Prof. Yoav Yair (Dean of Academic Development and Educational Technology) and Prof. Miriam Souroujon (LS) |
| 12:15-13:00 | **Lunch** | |

| | | |
|---|---|---|
| **13:00-13:45** | **Meeting with Course Coordinators** | List of Life Sciences Course Coordinators will be provided on location |
| **13:45-14:15** | **Meeting with Tutors** | List of Life Sciences tutors will be provided on location |
| **14:15-15:00** | **Meeting with B.Sc. and MA students** | List of Life Sciences B.Sc & M.A students will be provided on location |
| **15:00-15:30** | **Introduction to the course development system** | Prof. Judith Gal-Ezer (Vice President) Prof. Yoav Yair (Dean of Academic Development and Educational Technology), Dr. Ilan Ben-Ami (Director, Academic Development Unit), Edna Tal (Director, Center for Technology and Distant Education), Prof. Itzhak Dotan (Chair, NLS), Prof. Miriam Souroujon (LS) |
| **15:30-16:00** | **Closed-door working meeting of the evaluation committee** | |
| **16:00-16:30** | **Summation meeting with heads of the institution and of the department**<br>Vice President for Academic Affairs<br>CHE Quality Assessment Coordinator<br>Chair, Natural & Life Science Department<br>Head of Life Sciences group<br>Head, M.A. Biological Thought program | Prof. Judith Gal-Ezer<br>Dr. Ronit Bogler<br>Prof. Itzhak Dotan<br>Prof. Anat Barnea<br>Prof. Simona Ginsburg |