

## Academic Program – Desert Studies - Microbiology

- The M.Sc. program is a two-year program.
- The chairperson of the teaching committee is:  
**Dr. Anat Bernstein.**
- Students are required to complete the following courses during the two-year program:

Subject	Credits
<b>Courses within the track of study</b> A. <b>Mandatory course</b> (2 credit points)  B. <b>Core courses</b> (12 credit points)  C. <b>Departmental and student seminars</b> (1 credit point)  D. <b>Elective courses I</b> (8 credit points)  E. <b>Elective courses II</b> (3 credit points)	26
<b>General courses</b>	4
<b>Thesis Writing</b>	12
<b>Total</b>	42

### A.Mandatory Course:

Course #	Lecturer	Subject	Credits
001-2-7006	Dr. Shai Arnon & Prof. Jack Gilron	Summarizing, Writing and Presenting Scientific Data	2

or

Course #	Lecturer	Subject	Credits
001-2-0153	Dr. Chris Arnush & Prof. Jack Gilron	Writing a Scientific Paper	2

**B. Core courses:**

Course #	Lecturer	Subject	Credits
001-2-3021	Dr. Itamar Giladi	Biostatistics: ANOVA and Design of Experiments	3
001-2-5005	Prof. Amit Gross, Prof. Zeev Ronen	Laboratory Methods for Environmental Studies	3
001-2-5011	Prof. Zeev Ronen	Environmental Microbiology	3
001-2-5059	Dr. Osnat Gillor	Water Microbiology+	3

+Nonmicrobiologists may take the course:

Course #	Lecturer	Subject	Credits
001-2-5159	Dr. Osnat Gillor	Introduction to Microbiologists	1

**C. Seminars and Thesis Writing -- Mandatory Courses:**

Students are required to attend Departmental Seminars (one seminar per semester)

Course #	Lecturer	Subject	Credits
001-2-5555	Dr. Chris Arnusch (coordinator)	Departmental Seminar A (first year)	0
001-2-5557		Departmental Seminar B (first year)	0
001-2-5556		Departmental Seminar A (second year)	0
001-2-5558		Departmental Seminar B (second year)	0

Students are required to present two seminars (one student seminar per year).

Course #	Lecturer	Subject	Credits
001-2-9995	Prof. Ali Nejidat (coordinator)	Student Seminar (first year)	0.5
001-2-9996		Student Seminar (second year)	0.5

### C. Seminars and Thesis Writing -- Mandatory Courses (Continuation):

In the third and fourth semesters, students must register for Thesis Writing.

Course #	Lecturer	Subject	Credits
001-2-9991		Thesis Writing A	6
001-2-9992		Thesis Writing B	6

Students who have completed the above Thesis Writing courses and who continue their studies for a fifth semester must register for the following course:

Course #	Lecturer	Subject	Credits
001-2-1000		Thesis Writing – Continuation	0

### D. Elective Courses I:

This is a partial list. The student is allowed to select other courses that are related to his/her area of research with the approval of the supervisor.

Students are required to complete at least 8 credits.

Course #	Lecturer	Subject	Credits
001-2-0004	Prof. Noam Weisbrod	Vadose Zone Hydrology	2.5
001-2-0009	Dr. Avraham Be'er	Physics of Bacterial Communities	2
001-2-0022	Dr. Anat Bernstein	Stable Isotope Application in Contaminant Hydrology	2
001-2-2015	Prof. Dina Zilberg and Prof. Amit Gross	Introduction to Desert Aquaculture	3
001-2-2017	Dr. Simon Barak	Plant Perception, Transduction and Response to Environmental Signals	2
001-2-2021	Prof. Dina Zilberg	Aquatic Animal Health	3
001-2-2025/6/7	Prof. Dina Zilberg	Practical Fish Disease Diagnosis (A/B/C) (prerequisite: Theoretical fish diseases course)	1
001-2-2036	Prof. Gideon Grafi	Molecular Biology and Epigenetics	2

**D. Elective Courses I (Continuation):**

<b>Course #</b>	<b>Lecturer</b>	<b>Subject</b>	<b>Credits</b>
001-2-2038	Prof. Naftali Lazarovich	Soil Physics	3
001-2-2040	Prof. Gideon Grafi	Lab Course in Epigenetics - A Concentrated course	3
001-2-2046	Prof. Aaron Fait	Analysis of Biological Networks	2.5
001-2-2290	Prof. Dina Zilberg	Aquatic Animal Health - Guided Reading Course	2
001-2-3086	Dr. Hadas Hawlana	Microbial Ecology	3
001-2-5010	Prof. Zeev Ronen	Groundwater Microbiology	2
001-2-5012	Prof. Zeev Ronen	Biodegradation Process of Synthetic Organic Compound in Water Soil	2
001-2-5026	Prof. Ali Nejidat	Nitrogen Transformations and Environmental Quality	2
001-2-5028	Prof. Moshe Herzberg	Microbial Biofilms in Water and Wastewater Treatment Processes (prerequisite: Introduction to Microbiology)	2
001-2-5029	Prof. Noam Weisbrod	Rural Water Development	2
001-2-5031	Prof. Moshe Herzberg	Physiology of Bacterial Biofilms (prerequisite: Introduction to Microbiology)	2
001-2-5038	Prof. Amit Gross	Water Sanitation	3
001-2-5040	Dr. Eli Zaady	Soil Microbial Ecology	2
001-2-5044	Dr. Shai Arnon	Biogeochemical Processes in Surface Water Systems	3
001-2-5060	Prof. Moshe Herzberg	Biological Processes in Wastewater Treatment	2

### D. Elective Courses I (Continuation):

Course #	Lecturer	Subject	Credits
001-2-5065	Dr. Shai Arnon	Flow and water quality in streams: Theory and practice	3
001-2-5066	Dr. Scott K. Hansen	Scientific computing with MATLAB and Python	3
001-2-5067	Dr. Scott K. Hansen	Introduction to contaminant hydrology	3
001-2-5129	Prof. Noam Weisbrod	Rural Water Development (field trip) – Prerequisite: Course # 001-2-5029	2
001-2-5041	Dr. Menachem Sklartz	Practical Bioinformatics for Environmental Studies - A and B (a two-semester course)	3
001-2-7007	Prof. Amos Zemel	Statistical Methods	3
205-2-5021	Dr. Moshe Kiflawi	Quantitative Methods in Ecology	3

### E. Elective Courses II:

This is a partial list. The student is allowed to select other courses that are related to his/her area of research with the approval of the supervisor.

Students are required to complete at least 3 credits.

Course #	Lecturer	Subject	Credits
001-2-0016	Dr. Roy Bernstein	Physicochemical Technologies for Water Treatment	2
001-2-1103	Dr. Hadas Hawlana	Introduction to Dryland Ecology	4
001-2-3344	Dr. Hadas Hawlana	Guided Reading in Microbial Ecology	2
001-2-4022	Prof. Ehud Meron	Pattern Formation and Spatial Ecology	3
001-2-4028	Prof. Arnon Karnieli	Remote Sensing for Agriculture, Rangeland and Forestry	3

### E. Elective Courses II (Continuation):

Course #	Lecturer	Subject	Credits
001-2-5006	Prof. Alex Yakirevitch	Migration Processes in the Unsaturated Zone of Soil	3
001-2-5034	Prof. Yoram Oren	Environmental Oriented Electrochemistry	2
001-2-5042	Dr. Roni Kasher	Amino Acids and Peptides: Chemistry and Biology	2
001-2-5100	Dr. Genadi Carmi	Introduction to Surface Hydrology	2
001-2-7010	Dr. Menachem Sklartz	Hands-on Introduction to R: Programming, Graphing and Statistical Exploration	2
376-2-5024	Prof. Shaul Sorek	Introduction to Modeling Transport Phenomena for Aquifer Remediation	3
001-2-5061	Dr. Edo Bar-Zeev	Nexus of the Desalination Industry and the Aquatic Environment	3
001-2-5062	Dr. Edo Bar-Zeev	Microbial Sociology: From a Single Bacterium to Biofilm and Biofouling	3
001-2-5068	Dr. Oded Nir	Aqueous Chemistry Modeling with PHREEQC	2

### General Courses:

Students are required to complete up to 4 credits.

Course #	Lecturer	Subject	Credits
001-2-0012	Prof. Daniel Ronen	Selected Issues Related to Groundwater Hydrology: Quality & Quantity	2
001-2-1103	Dr. Hadas Hawlena	Introduction to Dryland Ecology	4
001-2-3045	Dr. Shirli Bar-David	Conservation Genetics	3
001-2-4016	Dr. Leah Orlofsky	Geography of Desertification	2

**General Courses (Continuation):**

<b>Course #</b>	<b>Lecturer</b>	<b>Subject</b>	<b>Credits</b>
001-2-4029	Prof. Yosef Ashkenazi	Introduction to Statistics and Probability	3
001-2-6001	Dr. Aviva Peeters	Theory and Applications of Geographic Information Systems (GIS)	3