LEON H. CHARNEY
SCHOOL OF MARINE SCIENCES
בית הספר למדעי הים על שם ליאון צ'רני

Marine Geosciences International Program

Updated: October 2014

Inside This Pamphlet

1 About us
- The Department
- Faculty and Staff
- The University of Haifa
- The International School

5 The Program
- Overview
- Curriculum
- Program Objectives

14 Admission
- Requirements
- Application
- Tuition and Fees
- Financial Aid
- Academic Calendar

16 Student Life
- Housing
- Life On and Off Campus
- Facilities
- Healthcare
- Security
- Campus Map

19 Contact Us

A two-year MSc program taught in English that provides an opportunity to develop practical scientific experience at sea, together with a rigorous academic curriculum.

OVERVIEW

Welcome to the International Program in Marine Geosciences at the University of Haifa, a two-year MSc program taught in English.

Using the Eastern Mediterranean as a natural marine laboratory the program provides students with a unique opportunity to develop practical scientific experience at sea, together with a rigorous academic curriculum.

Recent significant deep-sea gas findings offshore Israel have prompted a period of unprecedented development and pose world-class scientific, technical and environmental challenges. These significant developments provide students with a wide range of career opportunities in disciplines such as exploration geophysics and environmental geology.

You will be studying with students from across the globe as well as with Israeli students of diverse backgrounds and ethnicities. Our renowned professors will assist you in developing unique expertise in a specialization within the field of geosciences and will provide you with the skills and knowledge you need to success in the highly competitive global geosciences arena.

We encourage you to learn more about our program and explore our website.

To gain a deeper insight into the research carried out in the Marine Geosciences Department at the University of Haifa, you're invited to view webinar recordings here. Live webinars are held every Monday at 1 p.m. Israel Time (UTC/GMT +2 hours) throughout the semester.

ABOUT US

The Dr. Moses Strauss Department of Marine Geosciences (DMG) is a leading edge, sea-going facility, established in 2007. DMG combines research and graduate studies of the marine environment in the following main disciplines: observational geophysics, mapping and remote sensing, geodynamics, tectonics, marine and coastal sedimentology, geochemistry, and chemical and physical oceanography. The DMG comprises one of the center poles in the multidisciplinary framework of the Charney School of Marine Sciences (CSMS), the only sea-going academic facility in Israel. Currently, the DMG faculty includes seven senior members and six adjunct faculty members.

Recent significant deep-sea gas findings offshore Israel have prompted a period of unprecedented development, and pose world-class scientific, technical and environmental challenges. The DMG and the CSMS are playing a leading role in addressing these challenges.

The department is located in the multi-purpose building on the main campus of the University of Haifa. It was established thanks to generous donations from Mr. Leon H. Charney and Mr. Ernest Strauss. The DMG is academically anchored in the Faculty of Natural Sciences. The department works in close collaboration with the Israel Oceanographical and Limnological Research Institute (IOLR), and is operationally supported by the Recanati Institute of Maritime Studies (RIMS).

Studies conducted in the Department of Marine Geosciences utilize state-of-the-art methods of data acquisition, processing and analysis to decipher trends and phenomena that occur in the marine geosphere. Over the last decade, geomarine studies have brought to the focus of global interest as a result of growing concerns regarding global changes, such as sea level and climate, the search for conventional and new energy sources and the emergence of unprecedented developments that offer new avenues of research. Research topics in this field are numerous, encompassing disciplines that interact in a way that demands a holistic research approach: the structure of the seafloor; the Earth's crust below it and the search for energy sources (oil, gas, hydrates); to dynamics of the water body above it; sea level variations and their relation to tectonic and climate changes; coastline developments in present and past times; (tsunami record, collapse of cliffs) and, finally, present and past influences on human evolution.

To gain a deeper insight into the research carried out in the Marine Geosciences Department, you're invited to view webinar recordings here. Live webinars are held every Monday at 1 p.m. Israel Time (UTC/GMT +2 hours) throughout the semester.

Faculty and Staff

Name	Research Areas	Position	Contact Info
Prof. Zvi Ben Avraham	Marine Geophysics, Tectonics	Founding Director	+972-4-8288790 zavraham@univ.haifa.ac.il
Prof. Uri S. Ten Brink	Marine Geophysics, tectonics, earthquakes, landslides and tsunami hazards	Head of the Department, Full Professor	+972-52-2569234 utenbrink@univ.haifa.ac.il
Dr. Uri Schattner	Tectonics, seismic interpretation, Earth systems, marine geology and geophysics, structural geology, sea floor morphology	Lecturer	+972-4-8249266 schattner@univ.haifa.ac.il
Prof. Barak Herut	Chemical Oceanography	Professor, General Manager of the Israel Oceanographic and Limnological Research (IOLR)	barak@ocean.org.il
Dr. Beverly Goodman	Marine Geoarchaeology and coastal environments	Lecturer, Lab Leader	+972-4-8288424 bgoodman@univ.haifa.ac.il
Dr. Gideon Tibor	Remote sensing, marine geophysics	Senior Lecturer	+972-4-8288794 tiborg@ocean.org.il
Dr. Michael Lazar	Marine and coastal geomorphology, tectonics, geophysics, Dead Sea	Head of Program, Lecturer	+972-4-8288424 mlazar@univ.haifa.ac.il
Dr. Nicolas Waldmann	Geology and geophysics of sedimentary basins	Lecturer	+972-4-8280736 nwaldmann@univ.haifa.ac.il
Dr. Revital Bookman	Sedimentology, Paleo-oceanography, paleo-climate, paleo-seismology, environmental studies	Lecturer	+972-4-8288792 rbookman@univ.haifa.ac.il

Name	Research Areas	Position	Contact Info
Dr. Yizhaq Makovsky	Geophysics	Senior Lecturer	+972-4-8249261 yizhaq@univ.haifa.ac.il
Mr. Barry Grinker	Marine Geosciences	Adjunct Faculty, Research Fellow at the Recanati Institute of Maritime Studies (RIMS)	barryg@netvision.net.il
Dr. Regina Katsman	Fluid and solid mechanics, reactive flow in porous media, modelling, computational physics.	Lecturer, Department of Marine Geosciences	reginak@research.haifa.ac.il
Prof. Mark Goldman	Development and application of geoelectric and electromagnetic geophysical techniques both on land and at sea. Member of SEG and IGS.	Academic Staff Member, Department of Marine Geosciences	mark@gii.co.il
Prof. Michael D Krom	Marine and Environmental Geochemistry with a special interest in nutrient cycling in the Eastern Mediterranean	Research Fellow, Department of Marine Geosciences	m.d.krom@leeds.ac.uk
Dr. Ilia Ostrovsky	Coupling of physical, chemical, and biological processes Sedimentation, Bottom sediment characteristics, Methane emission, Acoustics, Population dynamics, Primary and secondary production, Fish, benthos, plankton.	Research Fellow, Department of Marine Geosciences	ostrovsky@ocean.org.il
Prof. Boris Katznelson	Wave propagation theory, ocean acoustics and acoustical oceanography Academic Staff Member, Lecturer	Academic Staff Member, Lecturer	bkatsnels@univ.haifa.ac.il
Dr. Ilia Merhasin		Research Fellow, Lecturer, Department of Marine Geosciences	merhasin@eng.tau.ac.il
Prof. John K. Hall	Marine Geophysicist. Swath bathymetry compilations in and around Israel. Bathymetry compilations for Mediterranean, Black, Caspian, and Red Seas, Arabian and Persian Gulfs for IBCM and GEBCO. DTM of Israel. Digital and analog archiving of legacy marine geophysical data and publications. Arctic geophysical studies with research hovercraft. Member of AAAS, AAPG, AINA, AGU, RIN, SEG, Sigma Xi, THSOA, USNI, Norwegian Scientific Academy for Polar Research, and Fellow of GSA, GSL and RGS.	Research Fellow, Department of Marine Geosciences	jkh1@012.net.il
Dr. Iris Zohar	Geochemistry of Soil & Water; Nutrients Cycles; Stable Isotopes; Metals in the Sediment.	Postdoctoral Fellow, Department of Marine Geosciences	irisz2910@gmail.com
Ornit Maimon		Postdoctoral Fellow	
Ms. Merav Eilon		Administrative Assistant to the Heads of the Departments	

The University of Haifa

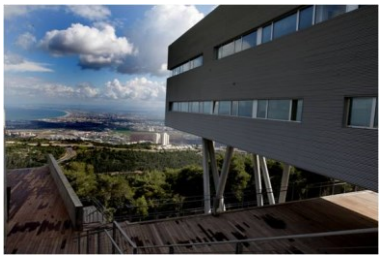
Situated at the top of the Carmel Mountain, amidst the Carmel National Forest, with breathtaking views of the Mediterranean Sea and the Galilee, the University of Haifa provides the perfect setting for your international graduate studies.

The University of Haifa is a microcosm of Israeli society dedicated to academic excellence and social responsibility. An exciting and inspiring cultural mosaic, the university has a diverse population of 18,000 students made up of secular and religious Jews, Christian and Muslim Arabs, Druze and Bedouin, new immigrants and native Israelis and a growing number of students from around the world. We invite you to join us.

One of Israel's leading research universities, the University of Haifa is home to the foremost, and only sea-going marine research department in Israel. Established in 2007 as part of the multidisciplinary Leon H. Charney School of Marine Sciences, the Department of Marine Geosciences (DMG) combines research and graduate studies of the marine environment in the following main disciplines: exploration geophysics, seafloor mapping, remote sensing, geodynamics, tectonics, marine and coastal sedimentology, geochemistry, chemical and physical oceanography.

Information about the city hotels, museums and culture, walking tours and places where you can hang-out is avalable on the internet, *e.g.* at Explore Haifa.






The International School

For the past 40 years, the University of Haifa International School (UHIS) has successfully attracted students from around the world to study at the undergraduate level. Today more than 1000 students from 40 different countries are enrolled annually in UHIS undergraduate and graduate programs that are unique in their integrated approach towards the international student.

Read More about the International School

THE PROGRAM

Overview

Using the Eastern Mediterranean as a natural marine laboratory, the International MSc Program in Marine Geosciences provides students with a unique opportunity to develop practical scientific experience at sea, together with a rigorous academic curriculum.

Studies conducted in the DMG utilize state-of-the-art methods of data acquisition, processing and analysis to decipher trends and phenomena that occur in the marine geosphere. Over the last decade, geomarine studies have brought to the focus of global interest as a result of growing concerns regarding global changes, such as sea level and climate, the search for conventional and new energy sources and the emergence of unprecedented developments that offer new avenues of research. Research topics in this field are numerous, encompassing disciplines that interact in a way that demands a holistic research approach.

Topics to be covered include: the structure of the seafloor; the Earth's crust below it and the search for energy sources (oil, gas, hydrates); to dynamics of the water body above it; sea level variations and their relation to tectonic and climate changes; coastline developments in present and past times; (tsunami record, collapse of cliffs) and, finally, present and past influences on human evolution.

Students will have the opportunity to interact with central research institutions in Israel including the Israel Oceanographic and Limnological Research Institute, the Geological Survey of Israel, the Geophysical Institute of Israel and other industrial institutes.

Taught in English, the program can be completed in two years and begins every October. Coursework, field trips and an educational cruise are held during the first two semesters, the summer semester is dedicated to establishing a research proposal, while the second year is dedicated to conducting research. Students will be required to submit a research thesis at the end of the second year of the program.

Upon completion of the program, students will be awarded a Master of Science in Marine Geosciences.

Field Work

Students will gain practical experience in marine geophysical survey work through hands-on field activities. The program includes educational research cruises to the deep sea, coastal and underwater field excursions, as well as geological field trips to marine structures currently exposed onshore. The research and educational cruises are carried out in water bodies in and surrounding Israel – the Mediterranean, the Dead Sea, the Red Sea and the Sea of Galilee. The geological field trips cover a wide variety of environments, from the Mediterranean coast to the Judea and Negev deserts. In addition to the educational benefit of field trips, they also provide a great opportunity for students to become acquainted with each other and explore Israel.





Curriculum

Program Structure and Scope

The program consists of 32 Israeli credits, including eight core courses, eight elective courses, marine coastal and inland field trips and two seminars. The elective courses expose students to a host of potential fields as well as encouraging international student exchanges. Students will be required to choose a research topic upon registration, together with a faculty mentor. The thesis research proposal will be submitted at the end of the first year under the supervision of faculty members. The summer and second year will be dedicated to carrying out the research and submission of the final thesis is expected at the end of the second year of the program.

Exceptional students may want to take advantage of the International School's Hebrew and/or Arabic courses, although it is not required and is not included in the tuition. Please see the International School website for more details.

The following tables list core and elective courses offered in the Marine Geosciences graduate program. Students may register for additional courses from the accompanying multidisciplinary courses, according to their program of studies and with the approval of their mentor and the MSc educational committee.

Core Courses	Credits
Geophysical Investigation of the Marine Environment	2
Signals Analysis - Fundamentals and Application	2
Geology of Marine Sediments	2
Physical Oceanography	2
Geochemical Oceanography	2
Hydrography	2
Educational Cruise	2
Scientific Writing and Research Presentation	2
Interdisciplinary School Seminar	0
DMG Colloquium	0

Elective Courses	Credits
Introduction to Geology	2
Introduction to Geophysics	2
Seismic Processing and Imaging	2
Processes in Marine Geology	2
Numerical Methods in Physics of Continuum	2
Processing and Analysis of Seismic Data: Workshop	2
Seismic Data Interpretation	2
Two-Phase Flow	2
Tectonics of the Oceans	2
Geology of the Eastern Mediterranean	2
Seafloor Morphology	2
Topics in Coastal Geomorphology	2
New Frontiers in Marine Research	2
Micropaleontology	2
Paleoceanography	2
Natural Energy	2
Underwater Geoarchaeology in Caesarea	2
Paleolimnology of the Dead Sea Region: Field Trip	1
Marine Geology of Mt. Carmel, Exploring the Cretaceous Seafloor: Field Trip	0.5
Coastal Geomorphology: Field Trip	0.5

Syllabi

Geophysical Investigation of the Marine Environment

Geophysical methods play a varied and important role in the investigation of the marine environment, particularly due to limited direct visibility and accessibility. This course aims to provide basic familiarity with the potential uses of geophysical mapping and imaging methods in various fields of marine investigation. Particular emphasis will be given to applications relating to the oil and gas industry. This course will examine the capabilities and limitations of each method, and the considerations in selecting adequate methods for the purpose of the study. A multitude of examples from literature and real experience will be presented for each of the methods discussed.

Signals Analysis – Fundamentals and Application

This course will focus on subjects within signals analysis. The following functions and methods will be examined: the Fourier trigonometric series; periodic functions; Fourier coefficients; orthogonal functions; partial sums; convergence of Fourier series; Gibbs phenomenon; complex variables; complex plane; different forms of complex numbers; functions of a complex variable; differentiation; Cauchy-Riemann conditions; complex integration; Cauchy's theorem; Cauchy's integral formula; Taylor and Laurent series; singularities; residues; residue theorem; calculations of integrals using residues; Fourier transform (FT); properties of FT; spectrum of signal; convolution; FT of convolution; Discrete Fourier Transform (DFT); the Shannon's theorem; MATLAB tools for FT, DFT; Fast Fourier Transform (FFT) in MATLAB; window FT; types of windows including Gaussian; spectrograms in MATLAB; filtering; and pass-band filter and stop-band filter in MATLAB.

Geology of Marine Sediments

The history of the oceans is drawn from the records preserved in marine sediments. This course focuses on the classification of marine sediments, their mineralogical and biogenic composition and deposition environments and processes, as well as introducing basic concepts in seawater composition and biogeochemical cycles. Students will be provided with tools for understanding sequence startigraphy and examining paleoclimate information, and isostatic and eustatic sea level records.

Physical Oceanography

Physical oceanography describes the properties of liquid medium, such as salinity and temperature, and their dynamic behavior including the study of currents, waves and tides. Water physics is the basis for understanding oceans and the behavior of other bodies of water in geological, chemical and biological systems. This course will focus on the following subjects within physical oceanography: water masses, flow equations, gravitational waves, geostrophic balance, Ekman stratifying effect, instability, world circulation, regional flow pattern and measuring methods.

Geochemical Oceanography

This course will focus on two major aspects: chemical cycles in seawater and geochemical processes in marine sediments, especially the interaction between seawater and sediments. Main concepts of interactions and processes, fluxes and reservoirs, sources and sinks in the marine environment will be discussed. Topics that will be examined in the course include chemical composition and properties of water, dynamic equilibrium in seawater, dissolved gases in water, resistance time and mass balance of several elements. In addition, transportation of dissolved and particle matter from land to sea, distribution and composition of marine sediment precipitation and dissolving, diagenesis and subsidence of sediments will be discussed. Chemical and geochemical processes in sediment, bioturbation, redox processes, and processes in the intermediate sediment-water such as interaction between volcanic rocks and seawater will be examined.

Hydrography

Prerequisites: Geophysical Investigation of the Marine Environment and Signals Analysis – Fundamentals and Application.

This course will summarize hydrographic methods and their implementation in Israel and abroad, principles of marine mapping and navigation, coordinate systems and international regulations. During the course, theoretical background and practical considerations of hydrographic surveying planning, acquiring and processing acoustic information (sonar, side scan sonar, multibeam and other advanced methods) and the influence of oceanographic parameters on this information will be discussed. Finally, mapping principles of scattered and arranged data will be examined.

Educational Cruise

Students, under the guidance of faculty, will spend six days at sea collecting geologic and geophysical data. This course will function as a workshop on data acquisition for other courses in the program. Collection and analysis of data will include: sampling of chemical and physical properties of the water column, continuous profiles of temperatures, salinity and chlorophyll using underwater equipment, dissolved oxygen, pH, nutrients, and chlorophyll and carbonate system of water samples along the depth section; geology: bottom-sediment sample by grab and core; geophysics: seismic reflection data collection, side scan sonar, multibeam, sparker or chirp, magnetic; and morphology: collecting bathymetric data. Students will learn how to operate sampling equipment during the cruise and will be taught how to process data, read diagrams and maps, and form sections.

Scientific Writing and Research Presentation

This course simplifies and demystifies the writing process. Fundamentals of effective scientific writing will be examined in order to reach an effective, concise and clear presentation of scientific research. Instruction will focus primarily on the process of writing and publishing a research thesis, a scientific manuscript and a research proposal. Methodology and graphic aspects of presentation and poster preparation will also be discussed.

Interdisciplinary School Seminar

The purpose of this seminar is to expose students and faculty of the Charney School of Marine Sciences, to interdisciplinary topics at the forefront of scientific research. This is a year-long seminar; each topic will be discussed for the duration of one semester. This forum will act as a workshop for presenting papers and projects and receiving methodological feedback. Examples include: environmental effects of global changes in the Quaternary, damage to the marine environment and ways of protecting it, energy sources and their use in the past and present; gas hydrates, etc.

DMG Colloquium

The DMG colloquium brings lecturers from around Israel and distinguished guests from abroad to the department to present their current line of research. This allows students and faculty to be updated on the latest research related to the different fields taught in the department. The colloquium is broadcast live on the Internet.

Introduction to Geology

The aim of this course is to provide the student lacking an undergraduate course in geology with a basic background in the subject.

Introduction to Geophysics

The aim of this course is to provide the student lacking an undergraduate course in geophysics with a basic background in the subject.

Seismic Processing and Imaging

Active source seismic imaging is the primary geophysical technique utilized in the oil and gas exploration and development industry, as well as in many marine research fields. The aim of this course is to provide a basic understanding of seismic waves and their use in various imaging techniques. This course reviews the nature of seismic waves, propagation of waves and rays, recording, sampling and processing of seismic reflection data, seismic velocities and their estimation, migration and imaging, the principles of refraction and additional seismic techniques. The course incorporates practical programming exercises utilizing the MATLAB program.

Processes in Marine Geology

This course focuses on morphological and tectonic processes that shaped the seafloor and subsurface throughout geological history. Data acquisition methods in the marine realm will be discussed, as well as interrelations between biological, chemical and physical processes. Lectures in this course will cover geological and geophysical aspects of the following subjects: formation and destruction of oceans and marginal seas - tectonics, structural geology, passive and active continental margins, isostasy, geological aspects of physical oceanography, habitats, ocean resources and operational failures,

seismic stratigraphy, gas hydrate, and basin analysis. A field trip will include visits to a rudist reef, atol, marine volcanoes and sites where facies changes are apparent - all exposed around Mount Carmel.

Numerical Methods in Physics of Continuum

Physics of continuum is the basis for energy and matter motion, from seismic waves and ocean currents to compaction of marine sediments. The objective of the course is to gain experience in numerical solutions of scientific problems in the area of marine sciences. Students will first learn the mathematical background of physics continuum and will focus on its use for analyzing and modeling ocean research issues. This course will discuss the theory behind conservation of mass, momentum, energy and heat equations for liquids and solids. Stress and strain will also be defined. Numeric methods for regular and partial (one or two dimensional) differential equations, linear and non-linear, matrices and the correlation to numeric solutions of the equations will be studied.

Processing and Analysis of Seismic Data: Workshop

A series of concentrated workshops will deal with various topics of seismic processing and analysis. The aim is to provide practical tools for research or commercial work in the field of active source seismology. Students in the workshop will process real data sets using the Paradigm software.

Seismic Data Interpretation

Prerequisites: Processes in Marine Geology and Geology of Marine Sediments (can be taken simultaneously with this course).

This course provides practical methodologies for seismic reflection data interpretation for unraveling subsurface structure and stratigraphy. Subjects to be discussed include seismic reflection theory, marine and land data acquisition, structure of seismic data, data loading to workstations and interpretation. Methodology of seismic data interpretation will cover the following subjects: stratigraphic and structural interpretation approaches to characteristic marine and land systems; stratigraphic sequences; unconformities and their significance through time and space; seismic facies; subsurface appearance of turbidity, slide and contoured systems; fault systems and their identification; graben development and inversion; gas-related patterns in the shallow and deep subsurface; DHIs flat spots and bright spots; identification of gas hydrates; sedimentary structure of diverse continental margins, basins along strike-slip faults. Students will practice interpretation and mapping of paper sections, and computerized interpretation skills in 2D and 3D using the Kingdom Suite software.

Two-Phase Flow

The main objective of this course is to gain experience of two- and three-phase flow of gas, oil and water within porous aquifers and wells, and to define the coupling between them. The following subjects will be covered: porous media, phase, phase saturation, relative permeability, phase compressibility, and correlation between fluid and solid properties; wettability, capillarity and capillary pressure, interphase phenomena (surface energy, surface tension, adhesion force); Darcy's law and diffusion equation in porous media; steady-state, quasy steady-state, and transient flow regimes; two-phase flow of gas and oil in wells, flow regimes, flow maps of gas and oil, pressure drop; radial flow and well modeling; modeling, numerical solutions and simulations.

Tectonics of the Oceans

This course will methodically describe the basics of tectonics, highlighting the formation of the present-day global oceans. Earth's inner and surface processes and their interactions will be discussed as well as the major processes that characterize oceanic and continental plates. Stages in the evolution of the plate's boundaries from different sites in the world will be examined including collision - from seduction to island arcs on the Arabian plate. Special attention will be given to diverse methods based on geophysics, geochemistry and paleomagnetics.

Geology of the Eastern Mediterranean

This course will discuss the geologic processes that have shaped the Mediterranean. The following subjects will be examined: the present structure of the Mediterranean, tectonics, the formation of the Mediterranean, Levant continental margins, the Eratosthenes Seamount, the Messinian event, the Cyprus arc, the Carmel structure, young tectonics in the Levant margin, the Nile and its deposits, the Hellenic arc and Aegean sea, tsunamis and earthquakes in the Mediterranean region.

Seafloor Morphology

The goal of this course is to expose students to different processes occurring on the seafloor and the way in which they are created, operate and shape the topography of the seafloor. This course covers the entire oceanic realm from the continental shelf to the deep ocean. In addition, new, often poorly understood topics, such as the creation of submarine canyons and contourites will be discussed.

Topics in Coastal Geomorphology

This course will focus on understanding processes occurring in the coastal environment and their connection to its development and to shallow geology. This course will describe and quantify characteristics related to ocean waves, tides, currents and the effect on shaping the coast, as well as the physical and geological processes responsible for erosion, transport and deposition of sediments. In addition, emphasis will be placed on fluctuations in sea levels as a result of changes in the environment.

New Frontiers in Marine Research

An interdisciplinary seminar on marine sciences focusing on leading research topics in the field. Each semester, a different topic will be chosen and discussed from scientific, legal and economics aspects.

Micropaleontology

Marine micropaleontology is one of the important cornerstones of marine geology and oceanography. This course will cover the history of micropaleontology within the realm of marine sciences and its many applications today. In addition to the theoretical aspect, the course will include a hands-on project in which students will learn how to process, isolate, identify and analyze micropaleontological samples.

Paleoceanography

This course will focus on the ocean's development during the geologic past, emphasizing ocean chemistry and physics, climatology and tectonic activity. The oceans have a critical role in climate dynamics, therefore an overall examination of circulation patterns and past and present oceanographic hydrology is necessary. Subjects addressed during the course will include: evidence of climate change in oceans and on land (ice cores, deep sea cores, paleomagnetics), the use of geochemical tracers, sea level changes, major climate changes in oceanic history, the shift from the greenhouse to the icehouse states during the Cenozoic Era, the ice age during the Pleistocene and climate changes during the Holocene.

Natural Energy

This course is designed for students specializing in the ocean, earth and environmental sciences who want to understand global exchange of energy and principles, methods and construction of a power station using renewable energy as well as climate dynamics. It's recommended that students selecting this elective have a background in calculus, general physics and chemistry.

Underwater Geoarchaeology in Caesarea

The findings from underwater excavations in Caesarea have contributed to the way in which ancient harbors are understood and the methods by which they are studied. Geoarchaeology, or the application of earth science methods to resolve archaeological questions, has played a key role in these studies. During the three weeks of the course, students will have the opportunity to excavate Caesarea's harbor, learn important excavation and recording skills, and analyze findings and sedimentological features. Lectures will address the broad history of Caesarea and its excavations, the geoarchaeology of harbors, paleotsunamis and marine archaeology. Study tours will provide a glimpse of Caesarea within a regional context.

Paleolimnology of the Dead Sea Region: Field Trip

This two-day field trip is dedicated to the present and ancient lakes that developed along the Dead Sea fault since its formation. The history of these water bodies will be studied through the fault's tectonic and geomorphological development. Sedimentary cross sections representing the Pleistocene until the present will be examined. Additional topics that will be discussed include lacustrine depositional environments, sediment transport processes, chemical deposition, radiometric dating methods, environmental and seismic reconstruction of the Levant.

Marine Geology of Mt. Carmel, Exploring the Cretaceous Seafloor: Field Trip

The exposed structure of Mt. Carmel was formed in the ocean. The field trip covers a wide range of topics in marine geology and how they are expressed on the present-day Mt. Carmel from formation processes to the nature and reasons for uplift. A rudist reef, atol, marine volcanoes, a talus reef and typical sites where facies and depositional changes are apparent – are all exposed in the vicinity of Mt. Carmel. The role of the Carmel in the tectonics of Israel as part of the Eastern Mediterranean system will be examined.

Coastal Geomorphology: Field Trip

This field trip in coastal geomorphology is aimed at providing hands-on information on processes that occur along the Israeli coast. These processes, such as the northwards longshore sand transport from the Nile delta coupled with a small, but important southward flow, have a great effect on the sand balance along the coast. The construction of hotels, holiday apartments and boardwalks add to the effect of ongoing erosion. However, attempts to protect the beach or the coastal cliff often cause more damage than good. The field trip will focus on the beaches in the Haifa area southwards until Michmoret. Examples of coastal construction and anthropogenic interference will be examined in the field.

Program Objectives

- To provide students with practical knowledge and experience in geological and geophysical survey planning and data collection at sea and onshore, using state-of-the-art equipment;
- To offer students the unique opportunity of processing and interpreting seismic data using the most advanced industrial geophysical software;
- To expose students to the best quantitative tools and knowledge needed to succeed in the current highly competitive global geosciences arena;
- To offer a challenging academic program that combines classroom study with hands-on scientific exploration at sea and onshore, and laboratory research in a multidisciplinary environment;
- To assist students in developing unique expertise in a specialization within the field of geosciences, while expanding their understanding of interacting earth systems;
- To develop teamwork and leadership skills and original thinking, as we view our students as our future professional colleagues.

ADMISSION

Requirements

- Accredited science degree (B.Sc.) in geology, geophysics, marine science or other related sciences, diploma and transcript
- A minimum of 3.0 GPA, 80% or equivalent
- TOEFL scores (if native language is not English or candidates have not previously studied at an institution of higher education where the language of instruction is English). A minimum of 550 (paper-based test), 213 (computer-based test) or 80 (internet-based test)
- Two letters of recommendation from relevant academic faculty members
- Curriculum Vitae/Résumé
- Copy of valid passport & six passport-sized photos
- Statement of research intent including research interests, goals and aims (500-750 words)
- Medical forms
- Suitable applicants will be interviewed

Academic Prerequisites

Students who do not have basic knowledge in mathematics, physics, chemistry, geology, atmosphere and computing will be required to successfully complete courses in these areas before being accepted into the program.

Application

International students must register through the International School. Applications are processed on a rolling admissions basis; we review and accept applications once the complete application file is received. There is an application fee of $100. To secure a spot in the program, we encourage students to apply as early as possible.

Please download the pre-application form and e-mail the completed form to infograd@univ.haifa.ac.il.

Applicants will receive the application form once they are approved to continue with the application process.

Israeli students must register online according to the University of Haifa regulations. Please click here for the link to the online registration form.

Tuition and Fees

For international students tuition and fees for the full program is $10,330. The fee breakdown appears below:

Tuition	$9,000
Service Fees (Security, Library, etc.)	$225
Health Insurance	$655
TOTAL	**$9,880**

is 26,000 NIS. There is a non-refundable $100 application fee for the program. Dormitories are available for $450 per month (see under Student Life tab).

Financial Aid

Scholarships and Financial Aid offered by the International School in the University of Haifa

Click here for online scholarship application.

Click here for scholarships offered by the Israeli government to foreign students

ACADEMIC CALENDAR

The program runs for two years starting October 18, 2015.

Summer 2014	
July Hebrew Ulpan	7 July 2014 - 31 July 2014
July Arabic Language Prgram	7 July 2014 - 31 July 2014
August Hebrew Ulpan	4 August 2014 - 28 August 2014
August Arabic Language Program	4 August 2014 - 28 August 2014
Fall Semester 2014	
Dormitory Check-In	19 October 2014
MA Programs Orientation	20 October 2014
International School Language Studies	21 October 2014 - 7 January 2015
MA Programs / Regular University	26 October 2014 - 30 January 2015
Eid Al-Adha Vacation	4 October 2014
Hanukah Vacation	21 December 2014
Christmas Vacation	25 December 2014
Winter 2015	
Intensive Hebrew Ulpan	26 January 2015 - 19 February 2015
Intensive Arabic Language Program	26 January 2015 - 19 February 2015
Spring 2015	
International School Language Studies	24 February 2015 - 4 June 2015
MA Programs / Regular University	10 March 2015 - 19 June 2015
Purim Vacation	5 March 2015
Passover Vacation	3 April 2015 - 10 April 2015
Yom Ha'Atzmaut Vacation	22 April 2015 - 23 April 2015
Shavuot Vacation	23 May 2015 - 24 May 2015
Summer 2015	
Intensive Hebrew Summer Ulpan I	6 July 2015 - 30 July 2015
Intensive Hebrew Summer Ulpan II	3 August 2015 - 27 August 2015
Intensive Arabic Language Program I	6 July 2015 - 30 July 2015
Intensive Arabic Language Program II	3 August 2015 - 27 August 2015
MA Programs / Regular University	12 July 2015 - 28 August 2015
Fall October 2015	
MA Programs / Regular University	18 October 2015

STUDENT LIFE

Housing

Students enrolled in the MA programs in the International School are encouraged to live in the dormitories located on campus. MA students stay in the Talia Dorms, which have spacious apartments of three or six single rooms and ashared kitchen and living space. Each bedroom has its own bathroom. Click here for a virtual tour of a standard Talia Dorm.

About 1,000 students live in the dorms at the University of Haifa, including students of all social, economic, religious and ethnic backgrounds. The dormitory campus is fully integrated with Israeli students. Individual dorm suites may house both Israeli and/or international students. We will try our utmost to fulfill your accommodation requests.

All apartments in the dorms are single-sex. In your room, you will be provided with a bed, desk, closet, and shelves as well as sheets, a blanket and a pillow. The kitchen comes equipped with a refrigerator and two stove-top burners. While dishes, utensils, and other appliances are not provided, most Israeli roommates are happy to share their kitchen supplies with their roommates.

Located in the dormitories complex are self-service laundry rooms and a grocery store. All public spaces in the dormitories have WIFI Internet connections. In addition, there is a moadon ("club") with a large-screen television which often hosts parties, workshops, lectures, and other activities.




Life On and Off Campus

Campus Life

The manageable size of the campus exposes international students to the events and activities taking place throughout the semesters. Students at the International School are strongly encouraged to participate in the variety of activities including concerts, fitness classes, salsa and Israeli folk dancing, lectures and conferences on various topics and sports competitions. In the International School, we promote the diverse religious and ethnic self-expression of all of our students and help them find their own unique connection to Israel. The campus is a mix of secular and religious Jewish native Israelis, new immigrants from the former Soviet Union, Ethiopia, North and South America and Europe, and Israelis whose religious and ethnic backgrounds are Muslim, Christian, Druze and Bedouin.

Social Activities

The University of Haifa International School offers a range of optional co-curricular activities for students participating in the various international programs. An experienced staff of student activity coordinators prepares an extensive itinerary of trips and tours which offers students an enlightening view of Israel, its people, natural beauty and cultural sites. Visiting lecturers come to speak on various aspects of life in Israel, including politics, security, religion, culture and other topics of interest to the students. Some activities may require additional fees. For a list of typical social activities please click here

Cultural Immersion

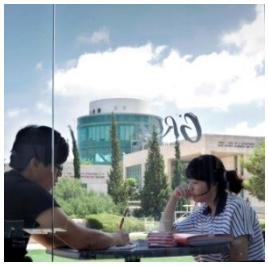
The International School makes every effort possible for students to become part of Israeli society. Israeli students will be enrolled in the program with international students, and international students will live alongside Israeli students in the campus dormitories.

Students can take advantage of the volunteer opportunities both on and off campus. Students may request to join a local family for a festive meal on holidays and the Sabbath, which is rewarding for both the student and the families involved.

Community Service

The International School encourages all students to volunteer in the greater Haifa community while studying in one of our programs. Native English speakers may choose to tutor immigrant children and youth. Students who wish to participate are paired up with an immigrant child, usually from Ethiopia or the former Soviet Union, and meet once a week. Non-native English speaking students may volunteer to visit a senior citizens' home or to tutor university students in a foreign language other than English. If a student has an additional interest or idea for a volunteer project, we will be happy to make the necessary arrangements. The experience of volunteering allows students to meet and develop close connections with Israelis and to understand first-hand some of the social issues affecting Israel. This investment of time and emotional energy also provides students with an opportunity to leave their mark on Israel before returning to their home country. Please contact the International School for more information about volunteer opportunities.






Facilities

The Library

There are a number of facilities on campus to which our graduate students will enjoy full access. The University of Haifa Library, offering computerized services as well as some two million book and non-book items, is one of the most advanced of its kind in the country. The library houses a large collection of both English and Hebrew books, as well as smaller collections of books in other languages.

Upon presenting their student ID card, graduate students at the International School have complete access to library services, such as checking-out books and one-on-one consultations with library staff to help locate any item in the library or at neighboring institutions across the country.

Please click here to visit the home page of the University Library

Computer Rooms

There are computer rooms available throughout the University campus as well as in the dormitories for student use. The computers are IBM compatible and are equipped with internet and Microsoft software programs. In order to print, students will need to purchase a print card. Hours of the computer rooms vary depending on location.

In addition, wireless internet access is available from a variety of locations on campus. Students who have laptops that are wireless-accessible will be able to use their laptops to connect to the internet.

There is no wireless-internet service in individual rooms in the dormitories. Students who want internet service in their rooms will need to first open a phone line or cable service, and then make arrangements with one of the Israeli internet providers.

Athletic Facilities

All MA students are welcome to purchase a membership to the Sports Center on campus. The Sports Center includes a gym with a variety of aerobic and weightlifting machines, tennis courts, and several large gyms for basketball, volleyball, and other activities. During the academic year the Sports Center is open Sunday through Thursday from 6:30 until 22:00, and Friday and Saturday from 8:00 until 15:00. Hours in the summer may vary. The cost for all students to join the Sports Center is 300 shekels for a semester.

In addition, international students are welcome to participate in the University's intramural sports teams, including basketball, soccer, ping-pong, and volleyball.

Please click here to visit the website of the Physical Education Department (Hebrew).

Healthcare

The International School at the University of Haifa requires that all students be covered by an Israeli health insurance company. We work with the Harel Insurance Company and the health insurance covers all injuries or illnesses that occur while you are in Israel. The insurance provides coverage from the moment you leave your home country until the moment you return to your home country.

The health insurance provided by Harel does NOT cover any pre-existing conditions or adult learners over the age of 65. Therefore, if you have any pre-existing conditions or are over the age of 65, we require that you also be covered by insurance from your home country that will be valid for treatment in Israel.

Health insurance is included in the tuition fees for all full-time students studying in the International School.

Harel-Yedidim Insurance Policy

Harel-Yedidim Website

Security

The University of Haifa has taken multiple measures to ensure the safety of our students. The University has security guards at the entrances to the campus as well as at the entrance to each building. In addition, there is a security guard at the entrance to the dorms 24-hours-a-day. In case of an emergency, the University of Haifa has a crisis management and evacuation plan in place.

Part of the orientation international students are given upon arrival to campus are instructions on how to keep themselves safe while in Israel. We advise all students to register with the embassy of their home country, we require that students rent an Israeli cell phone so that we can reach them at all times, and we ask that they inform us when they choose to travel out of Haifa. All of these measures allow us to know where they are and to be able to give them security updates when necessary.

Because there are places in Israel that may be less safe, and because international students are not always familiar with these areas, we encourage our students to participate in the trips that we offer. All of our trips and tours are organized and run in consultation with the relevant security authorities, including the University's Security Division and the Israeli Police and Defense Forces. Should students decide to travel on their own, we encourage them to consult with International School staff so that we can assist them in planning their trip.

If there is an emergency in Haifa, we immediately contact all of our students to be sure that they are safe. We ask them to contact their families directly, but we will also send out an e-mail to addresses of family and friends that the students have given us. We encourage family and friends at home who are worried about their student to be aware that what you see on television and what may actually be happening in Israel are not always the same. Despite the political situation in the region, Israelis continue to live their lives, including going out to public places and riding buses, and our international students agree that they feel safe in Haifa.

CONTACT US

Address:

International School Graduate Programs,

199 Abba Hushi Ave., Mount Carmel

Haifa, 3498838

Israel

infograd@univ.haifa.ac.il

+972-4-824-0766

+972-4-824-0391

Skype: haifainternationalschool

Campus Map