

**Course Name:** Bird Migration

**Course Number:** 221.4000

**Course Credits:** 4

**Lecturer:** Nir Sapor - [nirs@sci.haifa.ac.il](mailto:nirs@sci.haifa.ac.il)

**Teaching Assistant:** Itai Bloch - [itaibloch2@gmail.com](mailto:itaibloch2@gmail.com)

**Target Audience:** Second and third degree students in the Faculty of Natural Sciences, as well as students from other institutions of higher education (based on availability) and outstanding undergraduate students.

**Prerequisites:** Basic course in statistics, basic course in ecology.

**Course Objective:** Acquisition of knowledge and understanding of bird migration phenomenon in Israel and worldwide.

**Course Requirements:** Mandatory attendance and active participation in all lectures and field trips, opening exam on the first day, presentation of tour assignments, and submission of a final research project.

**Final Grade Composition:** opening exam (10%), presentation of the tour assignments (30%), concluding research project (60%).

**General bibliographic list:**

1. Alerstam, T. 1990. Bird Migration. Cambridge University Press.
2. Berthold, P., Gwinner, E., Sonnenschein, E. 2003. Avian Migration. Springer.
3. Dingle, H. 1983. Migration – The Biology of Life on the Move. Oxford University Press.
4. Newton, I. 2008. The Migration Ecology of Birds. Academic Press

**General:** The lectures will be held at the University of Haifa Carmel Campus and the Oranim Campus (Kiryat Tivon). The field trips will take place in the Jezreel Valley and the Maagan-Michael area. Please note that some of the field trips will occur at unusual hours, particularly early in the morning. Students will use their vehicles to travel between the campus and field trip locations, with three additional seats available in the Evolutionary and Environmental Biology department's vehicle allocated for the course. Participants will be responsible for arranging their own meals and, if needed, their accommodation. Binoculars will be provided to the course participants during the field trips for bird watching, and a few telescopes and bird guide books will be available for use. However, it is recommended to bring your own books, bins and scopes if you have them.

## Course plan (subject to changes):

### Day 1 - General background

Sunday 27.10 - Beit Margolin Natural History Collections room - Oranim College	Start	End
Lecture: course structure, procedures, opening quiz and general background on bird migration (Nir)	08:30	10:00
<b>Break time</b>	10:00	10:15
Lecture: Bird migration in Israel (Nir)	10:15	11:15
Lecture: Bird identification (Itai)	11:15	12:15
<b>Lunch break</b>	12:15	13:00
(Itai) Bird identification practice KAHOOT	13:00	14:00
Lecture: Flight biomechanics (Nir)	15:15	14:00
<b>Break time</b>	15:15	15:30
General preparation for field trips	15:30	16:00
Presentation of the <b>soaring birds migration</b> field trip mission (Nir and Itai) + mission planning (students)	16:00	17:00

### Day 2 - Ecology

Monday 28.10 - Jezreel valley + Oranim college	Start	End
<b>Soaring birds migration</b> field trip (Jezreel valley)	07:30	09:45
Back to Oranim college - Beit Margolin Collections room	09:45	10:30
Lecture: Stopover ecology (Nir)	10:30	11:30
Summary of tour and preparation of presentations of the <b>soaring birds migration</b> mission (students)	11:30	12:30
<b>Lunch break</b>	12:30	13:15
Lecture: Bird navigation (Nir)	13:15	14:15
Lecture: Genetics and evolution of bird migration (Nir)	14:15	15:15
<b>Break time</b>	15:15	15:30
Presentation of the <b>wader stopover and behaviour</b> field trip mission (Nir and Itai) + mission planning (students)	15:30	16:30

## Day 3 - Research Methods

Tuesday 29.10 - Maagan Michael fish ponds + University of Haifa		Start	End
<b>Wader stopover and behaviour</b> field trip (Maagan Michael fish pond)		06:00	09:15
Back to the university - Institute of Evolution seminar room		09:15	10:15
Lecture: Research methods - radar (Korin Reznikov)		10:15	11:00
Summary of field trip and preparation of presentations of the <b>wader stopover behaviour</b> mission (students)		11:00	12:00
<b>Lunch break</b>		12:00	12:45
Lecture: Research methods - observations and surveys (Nir)		12:45	13:45
Lecture: Research methods - transmitters and data loggers (Itai)		13:45	14:30
<b>Break time</b>		14:30	14:45
Lecture: Research methods - wind tunnel and stable isotopes (Nir)		14:45	15:30
Presentation of the <b>passerines ringing</b> field trip mission (Nir and Itai) + mission planning (students)		15:30	16:30

## Day 4 - Physiology

Wednesday 30.10 - Maagan Michael fish ponds + University of Haifa		Start	End
<b>Passerines ringing</b> field trip (Maagan Michael fish pond)		06:00	09:15
Back to the university - Institute of Evolution seminar room		09:15	10:15
Lecture: Feather moult and bird migration (Nir)		10:15	11:00
Summary of field trip and preparation of presentations of the <b>passerines ringing</b> field trip mission (students)		10:00	12:00
<b>Lunch break</b>		12:00	12:45
Lecture: Physiology of bird migration (Nir)		12:45	13:45
Lecture: Impact of weather and climate change on bird migration (Nir)		13:45	14:45
<b>Break time</b>		14:45	15:00
Presentation of the <b>Experimental ornithology of migrating birds</b> mission (Nir and Itai) + mission planning (students)		15:00	16:00

## Day 5 - Applied aspect of bird migration

Thursday 31.10 - Hof HaCarmel + University of Haifa		Start	End
<b>Experimental ornithology of migrating birds</b> field trip (Hof HaCarmel)		6:00	9:30
Back to the university - Institute of Evolution seminar room		9:30	10:15
Lecture: Consequences of bird migration for our life (Nir)		10:15	11:15
Summary of field trip and preparation of presentations of the <b>Experimental ornithology</b> mission (students)		11:15	12:15
<b>Lunch break</b>		12:15	13:00
Lecture: Nature conservation of migratory birds (Ron Efrat - zoom)		13:00	14:15
Lecture: The practice of bird conservation in Israel (Yoav Perlman)		14:15	15:00
<b>Break time</b>		15:00	15:15
Lecture and discussion: Course summary, presentation of the final assignment, course feedback		15:15	16:00