

ECODIM-V 2008
ECOLOGY & DIVERSITY OF MARINE MICROORGANISMS
Course schedule

Date	Activities		
Week 1 January 6-13	Morning	Afternoon	Evening
Sunday January 6		Afternoon – evening: Students and TAs arrive at the Estacion de Biologia Marina at Dichato and at the Cabañas El Mirador (Monica Sorondo, course coordinator, phone ++56 41 203585) 19.30: Get together. Pizza and drinks will be served at the guest house	
Monday January 7	<p>08.30 Welcome, Osvaldo Ulloa</p> <p>08.40 Presentation of participants. Assignment to groups A, B or C for evening presentations</p> <p>09.00 Course organization, Introduction to the course goals and overview of course program</p> <p>09.30 Introductory L 1 & 2: Microbial oceanography: what we know and what we would like to know (Kurt Hanselmann)</p>	<p>14.00 Laboratory facilities and equipment Introduction to experimental possibilities and suggestions for investigations in small groups A, B, C (Osvaldo Ulloa, Silvana A. Collado Fabbri and Rodrigo de la Iglesia)</p> <p>16.00 Individual study time, preparation of evening presentations</p>	<p>19.00 – 21.00 Student presentations, Group A P1: Paula Carpintero de Moraes P2: Joicye Hernández P3: Alvaro Olmos P4: Alejandro Murillo P5: Natalia Pizani</p>
Tuesday January 8	<p>08.30 L 3: Chemical basics and methodologies for the study of geochemical cycles and eco-metabolic processes (Kurt Hanselmann)</p> <p>10.30 L 4: Oceanographic conditions of the continental shelf environment (Osvaldo Ulloa)</p>	<p>14.00 Defining Individual Projects Begin lab work (Osvaldo Ulloa). Preparations for sample processing and of equipment for sampling cruise. (Silvana A. Collado Fabbri and Rodrigo de la Iglesia)</p> <p>Instructions about the use of the lab equipment (Silvana A. Collado Fabbri and Rodrigo de la Iglesia)</p>	<p>19.00 – 21.00 Student presentations, Group B P6: Bibiana Jara P7: Germán Pérez P8: Marcelo Fuentes P9: Jorge Rafael Bermúdez</p>
Wednesday January 9	<p>08.00 Group 1: RV Kay Kay II departs from Dichato harbor for sampling (water column sampling and sediment coring) at time series stations. Partial sample preparation on board the vessel.</p>	<p>14.00 Group 1: Sample processing for group projects: Filtration of water samples for flow cytometry, concentration and fixation for DNA amplification, from sediment cores and water column samples, cleaning Thioploca and /or Beggiatoa from macrofauna, dilution for</p>	<p>Group 1: Define and chose exam paper (internet, library and literature searches)</p>

<p>Wednesday January 9</p> <p>Wednesday January 9, cont.</p>	<p>08.00 Group 1: RV Kay Kay II departs from Dichato harbor for sampling (water column sampling and sediment coring) at time series stations. Partial sample preparation on board the vessel.</p> <p>08.30 Group 2: Define and chose exam paper (internet, library and literature searches)</p>	<p>14.00 Group 1: Sample processing for group projects: Filtration of water samples for flow cytometry, concentration and fixation for DNA amplification, from sediment cores and water column samples, cleaning Thioploca and /or Beggiatoa from macrofauna, dilution for enrichment cultures. Possibly assaying labile interstitial water components (H₂S) and fix others for assaying them later.</p> <p>14.00 Group 2: RV Kay Kay II departs from Dichato harbor for sampling (water column sampling and sediment coring) at time series stations. Partial sample preparation on board the vessel.</p>	<p>Group 1: Define and chose exam paper (internet, library and literature searches)</p> <p>Group 2: Sample processing for group projects: Filtration of water samples for flow cytometry, concentration and fixation for DNA amplification, from sediment cores and water column samples, cleaning Thioploca and /or Beggiatoa from macrofauna, dilution for enrichment cultures. Possibly assaying labile interstitial water components (H₂S) and fix others for assaying them later.</p>
<p>Thursday January 10</p>	<p>08.30 L 5: Applications of flow cytometry to water column microbial communities (Osvaldo Ulloa)</p> <p>10.30 L 6: Phylogenetics - evolutionary approaches to microbial diversity (Kurt Hanselmann)</p>	<p>14.00 Project work in groups: Sample storage, microscopy, sample processing (DNA extraction, PCR, Gel electrophoresis). Preparing culture media and setting up cultures. (Silvana A. Collado Fabbri and Rodrigo de la Iglesia)</p>	<p>19.00 – 21.00 Student presentations, Group C P10: Nicole Trefault P11: Daniella Mella P12: D'Hourdes Cuadra P13: Leslie Abarzúa P14: Cristóbal Mujica</p>
<p>Friday January 11</p>	<p>08.30 L 7: A biogeochemical systems approach to microbial ecology (Kurt Hanselmann)</p> <p>10.30 L 8: Microbially mediated coupling in nitrogen and sulfur cycling (Kurt Hanselmann)</p>	<p>14.00 Project work in groups: Continue with microscopy, sample processing (DNA extraction, PCR, Gel electrophoresis, cloning, RFLP. Staining, enrichments.</p>	<p>Time for home work and problem solving</p>
<p>Saturday January 12</p>	<p>08.30 L 9: Biogeochemistry and photosynthesis in the oxygen minimum zone (Osvaldo Ulloa)</p> <p>10.30 L 10: New large bacteria below the OMZ of the Eastern South Pacific: Is it a Precambrian microbialite relict community? (Victor Ariel Gallardo)</p>	<p>14.00 Project work continued</p> <p>16.00 L 11: Designing “diets” for microbes (Kurt Hanselmann) for those students who are not involved in doing lab work. This lecture can be repeated later if requested.</p>	<p>19.00 Summary of achievements, week 1</p>

Date	Activities		
Week 2 January 14-20	Morning	Afternoon	Evening
Monday January 14	08.30 L 12: Evolution of the Earth System : the rise of microbes (Edward DeLong) 10.30 L 13: How microbes couple P and Fe cycling (Kurt Hanselmann)	14.00 Project work continued Flow cytometry, DNA extraction, PCR, Gel electrophoresis, Microscopy, Staining, FISH, Enrichments	19.00 Project work continued and individual study time
Tuesday January 15	08.30 L 14: Marine bacteria and archaea : what are they, who are they, and why do we care ? (Edward DeLong) 10.30 L 15: Phylogenetic and functional microbial diversity in oxygen-deficient waters (Osvaldo Ulloa)	14.00 Project work continued, and demonstration workshops	19.00 Group A: Computer lab : Bio-geo-chemical thermodynamics (Kurt Hanselmann) Group B: Individual study time and project work
Wednesday January 16	08.30 L 16: Marine planktonic Archaea (Edward DeLong) 10.30 L 17: Microbial community genomics (aka, “metagenomics “): its application in the marine environment (Edward DeLong)	14.00 Project work continued, and demonstration workshops	19.00 Group B: Computer lab : Bio-geo-chemical thermodynamics (Kurt Hanselmann) Group A: Individual study time and project work
Thursday January 17	08.30 L 18: New perspectives in marine bacterial and archaeal photophysiology (Edward DeLong) 10.30 L 19: Ecology of transients and transition zones (Kurt Hanselmann)	14.00 Project work continued, and demonstration workshops	19.00 TA project presentations P15: Silvana A. Collado Fabbri P16: Rodrigo de la Iglesia Project work continued
Friday January 18	07.30 Bus leaves the Estacion de Biología Marina at Dichato for Concepción 08.45 - 18.00 Minisymposium in Concepción: Microbe Metal Interactions (special program) Sandwiches for lunch and drinks at the symposium site 18.30 Bus leaves for Dichato		

	19.30 Reception with course students, symposium speakers and guests at Dichato 22.30 Bus leaves with guests for Concepción		
Saturday January 19	10.00 L 20: Heavy metal resistance seminar (Sebastien Monchy) 11.30 L 21: Biosynthetic pathways of marine and freshwater algal toxins: what do we know? (Mónica Vásquez)	14.00 Project work continued	19.00 Turn in chosen exam paper 20.00 Summary of achievements, week 2 Project work continued
Sunday January 20	Free day Relax, catch up, prepare		
Date	Activities		
Week 3 January 21-26	Morning	Afternoon	Evening
Monday January 21	08.30 L 22: Use of Terminal restriction fragment length polymorphisms (T-RFLP), and other culture independent molecular tools to address bacterial community responses to organic and inorganic pollution. (Bernardo Gonzáles) 10.30 L 23: Marine Phytoplankton : role in the ecosystems and techniques of study (Daniel Vaultot)	14.00 Project work continued	19.00 – 20:00 Introduction to sequence analysis and probe design with ARB (Daniel Vaultot)
Tuesday January 22	08.30 L 24: Phytoplankton : major taxonomic groups (Daniel Vaultot) 10.30 L 25: Eukaryotic Picoplankton : discovery and major species (Daniel Vaultot)	14.00 Finish up project work	19.00 - 20:30 Group A: Analysis of sequences, design of probes using ARB (Daniel Vaultot) Group B: Individual study time
Wednesday January 23	08.30 L 26: Eukaryotic Picoplankton : environmental diversity and ecology (Daniel Vaultot)	14.00 All groups: Summarize project work	19.00 - 20:30 Group A: Individual study time Group B: Analysis of sequences,

<p>Wednesday January 23</p>	<p>08.30 L 26: Eukaryotic Picoplankton : environmental diversity and ecology (Daniel Vaultot)</p> <p>10.30 L 27: Evolution and modeling of microbial diversity and community variability (Kurt Hanselmann)</p>	<p>14.00 All groups: Summarize project work</p>	<p>19.00 - 20:30 Group A: Individual study time</p> <p>Group B: Analysis of sequences, design and validation of probes using ARB (Daniel Vaultot)</p>
<p>Thursday January 24</p>	<p>08.30 Course research results: Summary of project work and integration of results into project posters Design final versions of course project posters</p>	<p>Preparations for exam and for paper presentation</p>	<p>Preparations for exam and for paper presentation</p>
<p>Friday January 25</p>	<p>08.30 Course exam part 1: Student exam and paper presentations, max. 25 minutes per student, discussion included (course participants, staff and guests)</p>	<p>14.00 Course exam part 2: Student exam and paper presentations, max. 25 minutes per student, discussion included (course participants and staff). Special program.</p> <p>17.30 Course graduation at Dichato: Course participants, Faculty and invited Guests, Course Certificates Course evaluation, achievements, ideas for future courses</p> <p>Thank-you to campus and course staff</p> <p>18.30 Reception and Fare well party</p>	