



Huinay Seasonal School

Source of Inspiration for Science, Art and Culture

Training Course

Pacific Rim Ocean Data Mobilization and Technology (PRODIGY)

University of British Columbia, Vancouver, Canada
U. Concepción, Instituto Milenio de Oceanografía
Escuela de Ciencias del Mar, Pontificia Universidad Católica de Valparaíso
Fundación San Ignacio del Huinay,
Fiordo Comau, Chile
January 3–11 (group 1) & January 11–18 (group II), 2023

I. IDENTIFICATION

Name of the Course: PRODIGY Ocean Data

Type: intensive post-graduate course

Prerequisite: Undergraduate level

Duration: 7 days per group

Chronological hours: 56

Number of vacancies: 14

Professor in charge: Phillippe Tortell

Guest Professors: Richard Pawlowicz, Michael Bostock, Javier Maldonado

General coordinator: **Dr. Samuel Hormazábal Fritz**

II. DESCRIPTION

This intensive field course will provide students with an immersive and cross-cultural experience in the deployment of autonomous ocean sensors and the analysis of resulting data using advanced statistical and data science approaches. Students will have access to a variety of sensors that will be used to examine fundamental oceanographic and geophysical processes through self-directed projects. The course will be primarily taught in English.

III. LEARNING OBJECTIVES

- Apply and extend the concepts and tools developed in the PRODIGY Ocean Data course for data collection, analysis and visualization in a field-based setting

- Develop hands-on experience deploying ocean sensors and evaluating data quality
- Gain exposure to modern instrumentation used for autonomous ocean data collection, and use these sensors to measure environmental variables and test hypotheses
- Explore the use of ocean data and models to support sustainable salmon aquaculture, seismic risk assessment and other important socio-economic areas.

We will take advantage of the field course to deploy some hands-on activities in ocean data collection, analysis, visualization, with application to decision making. Focal areas will include marine aquaculture and seismic hazards. Students from Canada and Chile will work in teams, bridging scientific disciplines to share their experiences and expertise.

IV. CONTENTS

PART 1: Project design and framing of a testable hypothesis

PART 2: Construction and/or deployment of one or more autonomous ocean sensor

PART 3: Data analysis and interpretation

PART 4: Synthesis and communication of results

V. METODOLOGY

Students will work in teams of 2 – 4, developing a small research projects to test one or more hypotheses. Appropriate sensors will be selected and deployed to collect relevant data, which will be analyzed using a variety of statistical and data science methods.

VI. EVALUATION

Students will be assessed on the basis of their group projects, with a presentation and short report submitted for evaluation at the end of the course.

VII. APPLICATION REQUIREMENTS

The course will be open to senior undergraduate students, professionals and graduate students in areas related to earth sciences (eg. oceanography, geophysics, computer science and statistics).

The applicant should send to the organizing committee

- Motivation letter (1 page)
- Curriculum vitae
- Certificate of regular student of related careers
- Undergraduate students must attach to their application a recommendation letter from their tutor professor or thesis/memorial guide
- A basic knowledge of oceanography or marine geophysics and a basic level of programming is required. Students will also need at least an intermediate level of English.

VIII. FUNDING

Selected students will receive a scholarship that includes lodging, food and materials. The cost of transportation is not included, so the participant will have to pay for his/her own transportation to Huinay.

IX. BIBLIOGRAPHY

Pickard, GL, 1971. Some physical oceanographic features of inlets of Chile. *Journal of the Fisheries Research Board of Canada*, 28: 1077-1106

Oceanographic Processes in Chilean Fjords of Patagonia: From small to large-scale studies. *Progress in Oceanography* 129 (2014) 1–7.

Leeuw T., Boss E., and Wright DL. 2013. In situ measurement of phytoplankton fluorescence using low cost electronics. *Sensors*, 13, 7872-7883; doi:10.3390/s130607872

Oceanographic Processes in Chilean Patagonian Fjords, 2014. Special issue in *Progress in Oceanography*, edited by José Iriarte, Silvio Pantoja and Giovanni Daneri. *Progress in Oceanography* Volume 129, Part A, 1-170
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