



CALL FOR SCHOLARSHIP

**INTERNATIONAL COURSE
VOLCANOLOGY INTERNATIONAL COURSE: PROCESSES, HAZARDS AND MITIGATION IN CRISIS
CONTEXT
ONLINE EDITION - 2021**

Call Available on <https://www.agci.cl>
Chilean Agency for International Development Cooperation AGCID

INTRODUCTION

According to the United Nations Office for the Coordination of Humanitarian Affairs (2020), Latin America and the Caribbean is the second most prone region in the world to various natural disasters. For example, from Mexico to Chile, our countries are exposed to volcanic activity through the so-called “Ring of fire”.

In this context, the eruption of La Soufrière Volcan and the great damage it caused in Saint Vincent and the Grenadines demonstrated the need that exists today in the Caribbean to train professionals who work in relevant institutions in seismology, disaster risk reduction, and volcanology.

In view of this situation, the Agency for International Cooperation for Development (AGCID) seeks to reaffirm its commitment to the training of human capital in the Caribbean and will implement together with the University of Chile, the following volcanology course that will train professionals from the region in the processes, hazards and mitigation in the context of crises in the area. This program is part of our South-South Cooperation program.

GENERAL INFORMATION

I. NAME OF THE PROGRAM

Volcanology International Course: Processes, hazards and mitigation in crisis context (hereinafter referred to as the “Course”).

II. TOP GOAL

Strengthen fundamental knowledge of Physics volcanology, with a focus on different volcanic processes that represent a danger to society, such as monitoring techniques and mitigation strategies. Latin-American and the Caribbean cases of study will be analyzed to examine decision making and the design, implementation and public policies evaluation, especially in crisis context.

III. COURSE OBJECTIVE

- Provide the necessary tools to understand and analyze the volcanic activity, understanding that it corresponds to a natural process that strongly interacts with the society, having the capacity of generating hazards and damages to life and infrastructure
- To train students in the management of volcanic crises that will enable them to have an active and informed role for the evaluation of public policies and programs, using data and real cases that allow identifying good practices and to acknowledge the relevance and limitations of each technique.

IV. RESULTS

At the end of the course the participants will acquire the following competencies:

- Understands and applies fundamental notions of physics volcanology to analyze the interrelation between volcanological parameters, types of eruptions and associated hazards.
- Understands and applies the fundamental concepts of the volcanic monitoring techniques and its application in crisis situations to anticipate hazards and to help in the decision making.
- Employs in a basic way, different computational tools for the zonification of volcanic hazards.
- Applies and synthesises the knowledge acquired to analyze past study cases of volcanic eruptions. Is expected that the student will be capable in the future of participating in an active way of its corresponding role during volcanic crises, in conjunction with experts and civilian authorities.

V. PROGRAM DESCRIPTION

Continued below, is presented a brief outline of the contents of each of the four modules that make up the Course.

Module 1: Basic concepts of Physics Volcanology

In this first module it will develop the principal concepts of physics volcanology, such as generation, magma ascent and storage, role of volatiles, eruptive styles and volcanic processes. The student will be able to understand and analyze the most important factors that control the volcanic activity and identify the main products emitted by volcanic eruptions.

Module 2: Hazards associated to volcanic eruptions and its zonification

In this second module it will develop and analyze the principal hazards associated with volcanic activity: eruptive columns and pyroplast fallout, pyroclastic flows, lavas, lahars, volcanic avalanches, gases, tsunami and volcanic earthquakes.

The student will be capable of associating different hazards associated with a particular volcano, depending on the type of volcano and the composition of its emitted products, pre-existing topography and climatic conditions.

Geological maps and hazard maps in volcanic areas will be introduced, in order to identify the areas most susceptible to being affected by the different processes and its relation with urban settlements, infrastructure and cultural aspects of society.

Existing models will be applied for the zonification of different volcanic hazards such as LAHARZ, TEPHRA 2D, FLOWGO and the energy cone method. Several case studies of volcanoes in Latin America and the Caribbean will be analyzed.

Module 3: Volcano monitoring techniques

The third module will present various monitoring techniques associated with volcanic activity, such as, seismicity, deformation, gravimetric anomalies and gas sampling. Emphasis will also be placed on the geological mapping and identification of past eruptions as the key to understanding the future behaviour of a volcano.

Case studies will be reviewed with special emphasis on the relevance of different methods, the importance of integrating the different sources of information and its relation with the decision making in a volcanic crises.

Practical activities will be carried out, in which the student will have to discriminate the use of information, evaluate the situation presented and make decisions regarding the imminence or not of a volcanic eruption.

Module 4: Case studies in the Caribbean, Central- and South America

In this final synthesis module, different examples of the volcanological history of Latin America and the Caribbean will be presented and evaluated. The eruptions of Santa María, 1902, Mount Pelee, 1902, Soufriere St Vincent, 1902, 1979 y 2021, Nevado del Ruiz, 1985, Soufriere Hills, 1995-2010, Parícutín, 1943-1952, Chichón, 1982, Cordón Caulle, 2011 and Calbuco, 2015 among others, will be analyzed.

The chronology of eruptive events, precursor signals, decision making and crisis management, human losses and infrastructure will be discussed.

VI. LENGTH OF THE COURSE

The Course will be held in 2021 in 100% *On-line* mode. The Course has a length of 21 chronological hours, which include 18 hours of chair, workshops and synchronous group activities (real-time) and 3 hours destined for weekly voluntary tutorings. In parallel, each student must have 8 hours of autonomous work.

Classes, workshops and tutorings will be distributed in three weeks, between the 8th and 24th of November.

Día	Fecha	Horario	Actividad
Monday	November 8th	15:00 a 18:00 hrs. (Chilean time)	Session N°1
Wednesday	November 10th	15:00 a 18:00 hrs. (Chilean time)	Session N°2
Friday	November 12th	10:30 a 12:00 hrs. (Chilean time)	Tutoring Schedule (voluntary activity)
Monday	November 15th	15:00 a 18:00 hrs. (Chilean time)	Session N°3
Wednesday	November 17th	15:00 a 18:00 hrs. (Chilean time)	Session N°4
Friday	November 19th	10:30 a 12:00 hrs. (Chilean time)	Tutoring Schedule (voluntary activity)
Monday	November 22nd	15:00 a 18:00 hrs. (Chilean time)	Session N°5

Wednesday	November 24th	15:00 a 18:00 hrs. (Chilean time)	Session N°6
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The modality of the program will be non presential (via streaming) and requires a 7,5 hours dedication per week for synchronous activities (3 hours each session twice a week, and 1,5 hours for voluntary tutoring), in addition to the personal work from the student.

The students must participate via Zoom for the activities on the dates and schedules established on the calendar above.

VII. METHODOLOGY

The present academic program will be given under an *On-line* methodology, that combines lectures and group activities carried out synchronously, through the Zoom platform, with personal and autonomous work by the students, which will be provided by the teaching support platform of the University of Chile, through the use of forums, on-line tests, among other functionalities.

The students will have defined areas for consultation with the course professor (in the hours established for tutoring) and with the support of tutors, who will be available to resolve doubts and queries, in order to guide the autonomous work of the participants.

The course approval conditions will be associated with attendance and participation in classes and workshops, and the delivery of works and evaluations assigned by the course's professor. The course requires a minimum of 70% of attendance to the obligatory sessions, for its approval.

FACULTY

The course will be given by the Geologist and Volcanologist, Professor Angelo Castruccio, Ph.D and MSc. in Geology. He has more than 10 years of experience in the study of volcanic processes such as lahars, lavas and pyroclast falls. He has studied volcanic eruption in Italy, Iceland and Chile. He has taught the course of physics volcanology in the University of Chile since 2011. He currently is an assistant professor in the Department of Geology, Universidad de Chile.

Professor Daniel Díaz, Ph.D and MSc. in Geophysics. He has more than 10 years of experience in the application of geophysical methods, specially magnetotellurics, for the identification of magmatic structures under the Andean volcanoes. He currently is assistant professor in the Department of Geophysics, University of Chile.

Professor Francisco Delgado, Ph.D and MSc. in Geology. His area of expertise is the study of magmatic systems beneath volcanoes, through the analysis of deformation, gravimetry and application of theoretical models of magma movements. He currently is assistant professor in the Department of Geology, University of Chile.

VIII. LANGUAGE

The Course will be conducted entirely in English.

IX. FINANCING

The Program will finance¹:

- Tuition and program fees.
- Course Diploma in Volcanology: Processes, hazards and mitigation in the context of crisis, certified by the Postgraduate and Continuing Education School of the Faculty of Physical and Mathematical Sciences of the University of Chile.

X. REQUIREMENTS TO APPLY

The Course is aimed at people who meet with the following requirements:

- Professional experience in the area of earth sciences and in possession of a Bachelor's degree and/or a Professional Degree related to the area of the Course.
- Is desirable that they work in relevant institutions in terms of seismology, disaster risk reduction, volcanology or, failing that, count on the backing of an institution which presents importance with the theme of the course.
- Be designated by their respective governments in accordance with the procedure indicated in numeral XIII.
- Have access to an Internet network at least 7,5 hours per week for *On-line* class development in the dates and schedule established for the course.
- Be a citizen of the country in question and be a resident of that country.

XI. COUNTRIES AND/OR ORGANIZATIONS INVITED

The governments of the following countries will be invited to nominate applicants for the Course: **Member countries of Caribbean Community (CARICOM), through the Embassies of Chile.**

XII. TOTAL NUMBER OF PARTICIPANTS:

For the Course, the number of participants of the countries invited shall not exceed 20 students in total.

XIII. APPLICATION PROCESS

The application process is carried out as follows:

1. Scholarship Application: Applicants - Embassy of Chile

¹ No additional items other than those mentioned above will be financed. Personal expenses must be covered by each participant.

Those interested parties in participating of the course, must present the following documents at the Embassy of Chile in your respective country:

- 1) Application form (Annex I), with the registration of all the solicited information, properly completed and signed by the applicator and the Direct Management..
- 2) Letter of commitment by the Applicant (Annex II)
- 3) Labor Certificate (Annex III).
- 4) Non-English speaking applicants must present an accreditation of language management such as: certification through an international exam, university title copy in case of having completed undergraduate or postgraduate studies in an English speaking country, letter of confirmation from the Embassy of Chile in the country.

The candidates must deliver their application with the registration of all the information solicited in digital format through email at the Embassy of Chile corresponding to their country for pre-selection and officialization.

Applicants should inquire about the closing date of the call for applications at the Embassy of Chile in their respective country.

RELEVANT DATES

Stages	Dates
<u>Attention applicants</u> Application deadline for the Scholarship at the Embassy of Chile corresponding to each country.	October 27th, 2021
Pre-selection of candidates and entry of application to Scholarship Platform (for Embassy of Chile)	October 29th, 2021
Results publication	November 3rd, 2021
Notification to selected	November 3rd, 2021
Start of the course	November 8th, 2021

For the Scholarship application stage, the closing date of the present call will be confirmed by each country's Embassies, and **it could be earlier than indicated by AGCID**. Therefore, the deadline must be confirmed by the interested party directly with the Focal Point in his/her country (see Annex IV). For Embassies, the final date for receipt and formalization of applications to AGCID is Applications that have not been submitted by the corresponding Embassy of Chile, will not be considered.

TO CONSIDERATE:

- No incomplete, illegible or late applications will be submitted at any stage.
- For the Scholarship selection will only be evaluated applications officially remitted by the Focal Point. No applications remitted directly by the postulant will be considerate.
- Is the applicant's responsibility reading carefully the call, with all its requirements, application procedures and all the documentation attached; as well as submitting their candidacy in compliance with the professional requirements specified in each offer.
- The information provided in the application form and its respective annexes have the character of sworn statement, therefore, in case of having falsified, adulterated, hidden or submitted inaccurate information with the purpose of obtaining the scholarship, the applicant will assume the administrative, civilian and respective penalties, in accordance with the regulations of its country of origin. Likewise, the applicant will be ineligible to apply for future calls for application indefinitely. This must be reported by the committee formed for the implementation of the scholarship.

XIV. SELECTION

The selection will be carried out by the corresponding Embassy of Chile based on the following criteria: admissibility, priority assigned by the Embassy, degree of compliance with the profile, professional experience in the area of the course, curricular consistency and possibility of impact, among other elements considered pertinent.

The Course executors will inform the selected participants the result as of August 18th, 2021 and will subsequently contact each selected participant by e-mail, according to the contact information provided in the application form, to coordinate the corresponding arrangements for their participation.

Furthermore, the result of the selection will be published in AGCID's website, www.agci.cl for the information of all interested parties. **NOTE:** only those selected will be notified by e-mail.

The final result of those who obtain the scholarship is the exclusive decision of the Chilean Embassy in the country of application. The decision is final.

XIII. OBLIGATIONS OF THE PARTICIPANT

- Applicants are responsible for providing current contact information (Annex I: Application Form) and constantly check their e-mail accounts, in case of solicitudes and official announcements by the coordinating team, in accordance with the dates described in numeral XIII.
- Participants will adhere strictly to the Course program. Requests of changes or alterations to the initially established Course program will not be accepted (except for emergency

reasons, duly justified).

- The Course will be held exclusively in a non presential mode for the present edition. A minimum of 70% attendance to class and workshop sessions is required for approval.
- Carry out all the necessary formalities for their participation in the program, including authorization from the head of the program.
- Participants must cover any personal expenses during the course or not specified in the FINANCING section.

CONTACTS

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ANNEXES

- Annex I: Application Form.
- Annex II: Applicant's Commitment
- Annex III: Labor Certificate
- Annex IV: List of Focal Points