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Teaching experience of the “Application of Earth Sciences in Nuclear Test Monitoring”

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INTRODUCTION AND MAIN RESULTS

After our participation in the 2014 Comprehensive Nuclear-Test-Ban Treaty (CTBT) Academic Forum, we decided to propose a formal course for the Earth Science undergraduate program offered in the School of Sciences at the National Autonomous University of Mexico (UNAM).

After our reflections, our next step is to promote this course in different schools at UNAM and propose it as an “universal course” that any person enrolled at UNAM can take.

We would like to thank the CTBTO and UNAM for their support during the last years.

SnT 2025 CTBT: SCIENCE AND TECHNOLOGY CONFERENCE
8 SEPTEMBER ONLINE DAY
9 TO 12 SEPTEMBER AT HOFBURG PALACE, VIENNA & ONLINE

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The birth of the idea

After our participation in the 2014 Comprehensive Nuclear-Test-Ban Treaty (CTBT) Academic Forum, we decided to propose a formal course for the Earth Science undergraduate program offered in the School of Sciences at the National Autonomous University of Mexico (UNAM).

Academic Forum 2014, Group photo, taken from https://www.ctbto.org/news-and-events/news/second-ctbt-academic-forum-meets-vienna

First step: proposal

In August 2019, the elective course "**Application of Earth Sciences in Nuclear Test Monitoring**" was first taught for students enrolled in the bachelor's degree of the Earth Sciences program at UNAM.

The main objective of the course is to provide students with an overview of the International Monitoring System of the CTBTO and the possibilities of using the data generated for scientific and civil applications in Earth Sciences topics.

A second objective is to inform students of different Mexican institutions about the CTBTO activities and working groups such as the International Data Center (IDC), the International Monitoring System (IMS) and On-site Inspection activities (OSI).

Second step: in the classroom

In this course we covered several topics:

1. Introduction to the CTBTO
2. Entry into force and universalization of the CTBT
3. The International Monitoring System and its applications
4. The International Data Center: data processing and analyses
5. On-site Inspections: preparations and use of datasets to detect nuclear tests
6. Case studies: simulation and the use of datasets for scientific and civil research

Next steps: promote

Our next step is to promote this course in different schools at UNAM and propose it as an "universal course" that any person enrolled at UNAM can take.

Students and teachers´reflections of the course

"This was such an interesting and fun course to teach. I was so overwhelmed by the students interest in this topic". *Claudia I. Rivera Cárdenas, teacher.*

"We reviewed a bit of history from how nuclear energy started, the methodology (direct or indirect) used in nuclear tests and the negative effects those may have over human health and the environment caused either by accidents or war issues. We also asked questions like what would happen if a nuclear winter suddenly started?, what would be its influence at a global level?, how it would impact and contribute to climate change?" *Fernanda Citlame Franco Rodríguez, student.*

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