



## CESECO - Technical and Economic Analysis of open-pit mining operations 2014 - 2015

Training program for managers and engineers in the mining industry



### Modular training program qualifying for international certification endorsed by MINES ParisTech

3 possible training solutions meeting your needs, September 2014 to July 2015, in Paris

- Training Course** 1 to 2 weeks  
(MINES ParisTech-Geosciences Centre certificate)
- Seminar** 3 to 7 weeks, consisting of several courses  
(MINES ParisTech-Geosciences Centre certificate)
- Full program** 20 teaching weeks, 3 weeks of technical visits, 15 weeks tutored project  
(MINES ParisTech specialized training degree-eq to Master)

- Seminars :** CESECO 1 Introduction (Only for full program participants)
- CESECO 2 Technical basics
- CESECO 3 Mining methods and mine planning
- CESECO 4 Economics for mining projects
- CESECO 5 Environmental and social aspects

For questions  
+ 33 (0)9 81 74 09 21  
[training@cayambepartners.com](mailto:training@cayambepartners.com)  
+ 33 (0)1 64 69 48 94  
[training@geosciences.mines-paristech.fr](mailto:training@geosciences.mines-paristech.fr)

Get to know us  
[www.cayambepartners.com](http://www.cayambepartners.com)  
[www.geosciences.mines-paristech.fr](http://www.geosciences.mines-paristech.fr)

The MINES ParisTech Geosciences Centre has a long-standing track record in organizing CESECO. In 2014 the centre joined forces with CAYAMBE Partners for CESECO dissemination and promotion. The centre and Cayambe also collaborate for the implementation of the CESAM mining sector governance training program. The centre offers a wide range of outstanding trainings for executives of mining companies and administrations.



CESECO

Detailed information about seminars and courses

## CESECO 1 : Introduction (3 weeks)

This seminar is only open to full program participants. It consists of an introduction to the world mining industry, and case studies in the field (geology, mine, environment)

## CESECO 2 : Technical basics (4 weeks)

This seminar provides the theoretical and practical bases in the field of soil and rocks mechanics, slopes stability and slopes movement, water management in the mines and rock fragmentation techniques



Costs do not include travel, accommodation and living costs in Fontainebleau

### CESECO 2A - Introduction to soils and rocks mechanics

(from 29 Sep to 3 Oct 2014, 1 week, €2 500)

- Main geomechanical parameters of soils and rocks and corresponding laboratory tests
- Parameters of mechanical strength and constitutive models

### CESECO 2B - Slope stability and stabilization in open pit mining

(from 6 Oct to 10 Oct 2014, 1 week, €2 500)

- Mechanisms of deformation and failure of slopes based upon geological structures and mechanical behavior of materials (soil or rock)
- Calculation of slope stability
- Monitoring and control of deformations of a bench or an unstable slope, and defining stabilization and reinforcement methods.

### CESECO 2C - Introduction to underground water and water management in mines

(from 13 Oct to 17 Oct 2014, 1 week, €2 500)

- Basic concepts about groundwater flows and main characteristics of aquifers and groundwater
- Interpretation of pumping tests and definition of pumping operations
- Management of drainage water in mines

### CESECO 2D - Rock fragmentation techniques

(from 20 Oct to 24 Oct 2014, 1 week, €2 500)

- Theoretical principles and techniques of fragmentation using explosives
- Methods and tools for blast design optimization and evaluation of results
- Mechanical fragmentation technique and of cutting rocks

Attending the entire seminar ?  
The cost will be €8 000



## CESECO 3 : Mining methods and mine planning (7 weeks)

This seminar offers an overview of basic principles and key fields of modelling techniques, different steps and parameters of a mining project, selection of mining methods and appropriate equipment for your deposit, mine planning and reconciliation along the mining value chain.



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### CESECO 3A - Introduction to orebody modelling: geological modelling and resource assesment

(from 3 Nov to 14 Nov 2014, 2 weeks, €5 000)

- Introduction to geological modelling
- Introduction to geostatistics and resource assessment
- Practical work with dedicated software (SURPAC, ISATIS)

### CESECO 3B - Main stages and parameters of mining projects

(from 17 Nov to 21 Nov 2014, 1 week, €2 500)

- Different stages of a mining project
- From expertise to a prefeasibility study
- Content of feasibility studies
- Main parameters of mining projects: production rate, cut-off grade and selectivity

### CESECO 3C - Mining methods and equipment in open-pit mines

(from 24 Nov to 28 Nov 2014, 1 week, €2 500)

- Mining methods in surface and deep open pit mines
- Introduction to *in situ* recovery techniques and methods
- Mining techniques and equipment: loading and hauling, belt conveying, IPCC system, dispatch system and production control

### CESECO 3D - Optimisation, design and planning of open-pit mines

(from 1 Dec to 12 Dec 2014, 2 weeks, €5 000)

- Technical parameterization of reserve and application to final pit optimization
- Design of the final or intermediate pits
- Long to short term planning
- Application works with dedicated software (WHITTLE et SURPAC)

### CESECO 3E - Reconciliation in the mining industry: needs, methodologies, systems and benefits

(from 15 Dec to 19 Dec 2014, 1 week, €2 500)

- Measuring and sampling: key concepts and best-practice
- Reconciliation along the mining value chain

Attending the entire seminar?  
The cost will be €12 000

## CESECO 4 : Economics for mining projects (5 weeks)

This seminar will allow you to understand the complexity of the on-going management of a mining company, subject to the hazards of a deposit always poorly known and most often an unpredictable international market.

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### CESECO 4A - From technical mining project to economic evaluation

(from 26 Jan to 6 Feb 2015, 2 weeks, €5 000)

- Basics of economic evaluation of projects
- Introduction to economic evaluation of mining project

### CESECO 4B - Economic evaluation of mining projects - uncertainties and risks

(from 9 Feb to 20 Feb 2015, 2 weeks, €5 000)

- Tutorials on real cases studies: taxation impacts, taxes and ways of funding on the economy of the mining project, full economic evaluation
- Uncertainties and risks: evaluation of the various risks, sensitivity analysis, Monte Carlo simulation, real options

### CESECO 4C - Examples of mining projects and of feasibility studies

(from 23 Feb to 27 Feb 2015, 1 week, €2 500)

- Examples of feasibility studies in base metals, precious metals, uranium, industrial minerals...
- The role of international financial institutions in mining projects

Attending the entire seminar?  
The cost will be €10 000

## CESECO 5 : Social and environmental aspects (2 weeks)

The seminar provides participants with the tools for effective consideration of these dimensions

### CESECO 5A - Relationships Mining Industry - Governments

(From 2 Mar to 6 Mar 2015, 1 week, €2 500)

- Mining legislation, regulation and control of mining activities
- Mineral rights and contracts business-Government

### CESECO 5B - Corporate Social Responsibility of mining companies

(from 9 Mar to 13 Mar 2015, 1 week, €2 500)

- Control and management of environmental risks
- Socio-economic impacts of mining projects

Attending the entire seminar?  
The cost will be €5 000

## The MINES ParisTech Geosciences Centre

Located in Fontainebleau, near Paris, the Geosciences centre, research and training centre common to MINES ParisTech and ARMINES, develops activities in the field of Earth Sciences and Environment. For over 35 years, it proposes professional training programs for executives of the mining industry that have been followed by more than 1500 professionals.



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### Language

All trainings are provided in English language

### Lecturers

Teachers & researchers at the Geosciences Centre and professionals of the mining industry.

### Training costs

- COURSES:	One week	€2 500
	Two weeks	€5 000
- SEMINARS:	CESECO 1	for full program participants only
	CESECO 2	€8 000
	CESECO 3	€12 000
	CESECO 4	€10 000
	CESECO 5	€5 000
- FULL PROGRAM :		€15 800

(Included: All 5 CESECO seminars, 3 weeks of technical visits and a tutored personal project of 4 months)

### Certificates and Diplomas

COURSES & SEMINARS  
CYCLE

MINES ParisTech Endorsed International Certificate  
MINES ParisTech Specialized Training Degree (eq Master).

### Schedule

FULL PROGRAM	8 Sep 2014	10 Jul 2015
CESECO 2	29 Sep 2014	25 Oct 2014
CESECO 3	3 Nov 2014	19 Dec 2014
CESECO 4	26 Jan 2015	27 Feb 2015
CESECO 5	2 Mar 2015	13 Mar 2015

The number of participants is limited. Organizers reserve the right to cancel seminars and registration fees will then be refunded. To attend the full program in two years, please contact us.



CAYAMBE Partners - 111 avenue Victor Hugo 75 784 Paris Cedex 16 & 9 route du port Le Dourduff en Mer 29252 Plouezoc'h , FRANCE  
SARL au capital de 10 000€ - RCS Brest 750 616 039 – 000 11 NAF 7022z – TVA FR 16 75061639

MINES ParisTech - Centre de Géosciences, 35 rue Saint Honoré 77305 Fontainebleau, FRANCE  
ARMINES - 60 boulevard Saint-Michel - 75272 PARIS Cedex 06 - N° formateur : 11752640675 - N° SIRET : 775 664 113 00013