INTERMIN: YOUR SPECIALIZED PORTAL OF GLOBAL RAW MATERIALS TRAINING

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Geological Survey of Spain

Sustainable Low Impact Mining solution for exploitation of small mineral deposits based on advanced rock blasting and environmental technologies
Who are we?

The Instituto Geológico y Minero de España (Geological Survey of Spain)

- Senior (founded 1849) public research autonomous institution attached to the Ministry of Education and Science
- Main Earth Sciences Research Centre of Spain. Total 389 employees, 291 graduates
- Specialized in various fields of activity such as geology, environment, hydrogeology, mineral resources, natural hazards and land use planning
- IGME facilities, including its headquarters, project offices in several places around the country, laboratories, warehouses, drill core repository, library and museum, are equipped with advanced technology and technical resources
- IGME is the national centre for the creation of knowledge infrastructure, information and R&D in Earth Sciences
– Objectives
– Expected results
– The Consortium
– Project structure
– Global coverage
– Technical description & implementation
– Impact
1. **Map skills and knowledge** in the EU and the third countries
2. **Identify key knowledge gaps and emerging needs**
3. **Develop a roadmap for improving skills and knowledge**
4. **Develop common metrics and reference points for quality assurance and recognition of training**
5. **Develop a comprehensive competency model for employment** across the primary and secondary raw materials sector
6. **Establish common training programmes** in the raw materials sectors
7. **Creation of a self-sustainable long-term lasting international network of training centres for professionals in the raw materials sector**
OBJECTIVES

- Map skills and knowledge in the EU and in mining advanced countries
- Identify key knowledge gaps and emerging needs
- Develop roadmap for improving skills and knowledge
- Establish common training programmes in the raw materials sectors

Effective knowledge of European and international context
Effective knowledge of professionals’ skills, employers needs and training offers
Global expertise in continuing professional development
Create a self-sustainable long-term lasting international network of training centres for professionals

IGME
EGS
BRGM
ASGMI
UPM
EFG
MUL
CCOP
AGI
UQ
PGI
YES
SGU
EGS
BRGM
LPRC
EFG
MUL
CCOP
AGI
UQ
YES
EFG
MUL
AGI
UQ
YES
EXPECTED RESULTS

• Implementation of the Raw Materials Initiative and achieving the objectives of the EIP on Raw Materials, in particular in terms of establishing and maintaining strong and sustainable relationships with the leading training institutions in the relevant countries;

• Increasing the EU competence and expertise in the field of the primary and secondary raw materials;

• Improved availability of qualified and skilled workforce leading to higher competitiveness of the EU raw materials industry;

• Enhancing the possibility for new cross-sectorial innovation;

• Fostering international cooperation;

• Generate a feasible, long-lasting international network of technical and vocational training centres for raw materials’ professionals.
THE CONSORTIUM

PILLAR 1. THE PROFESSIONALS
- European Federation of Geologists (EFG) (WP3)
- American Geological Institute (AGI)
- Polish Association of Mineral Asset Valuators (PAMAV)
- Young Earth Scientists Network (YES Network)

PILLAR 2. THE EMPLOYERS
- EuroGeoSurveys (WP5)
- Association of Iberoamerican Geological and Mining Surveys (ASGMI)
- Geological Survey of Spain (IGME-SP) (WP6) (WP7)
- Geological Survey of Greece (IGME-GR)
- Geological Survey of Hungary (MFGI)
- Geological Survey of Portugal (LNEG)
- Geological Survey of Sweden (SGU)
- Geological Survey of France (BRGM)
- Czech Geological Survey (CGS)
- GeoInform of Ukraine (SRDE)

PILLAR 3. THE TRAINING AND EDUCATIONAL ORGANISATIONS
- Leoben University (WP1)
- Polytechnic University of Madrid (WP4)
- Universities of Queensland and Western Australia
- La Palma Research Center (WP2)
- Coordinating Committee for Geoscience Programmes in East and Southern Asia (CCOP)

ADVISORY BOARD
- International Association for Promoting Geoethics (IAPG)
- European Technology Platform on Sustainable Mineral Resources (ETP SMR)
- IndustriALL Global Union
- European Association of Mining Industries, Metal Ores & Industrial Minerals (Euromines)
- Anthropogenic Resources Working Group UNECE
- The United Nations Environment Programme (UNEP)
- United Nations Educational, Scientific and Cultural Organization (UNESCO)
- United Nations Development Programme (UNDP)
- United Nations Economic Commission for Africa (UNECA)
- International Union of Geological Sciences (IUGS)
GLOBAL AUDIENCE OF APPROXIMATELY 550 000 PROFESSIONALS FROM 5 CONTINENTS
CONTEXTUAL ENVIRONMENT AND LOGICAL APPROACH OF INTERMIN
## ACTIONS

- **Defining a skills catalogue** for the raw materials sector (WP1);

- **Mapping and collecting worldwide information** on existing technical and vocational training courses for raw materials industry professionals - including mid-level and professional skills, alongside high-level skills (WP1);

- Development of a **international repository** of existing training courses for the raw materials sector (WP1);

- Identification of **existing gaps** in education and training outcomes, considering existing and future employers needs (WP2);

- **Integration** of the appraisal of existing and emerging skills needs, and **recommendations** from past and existing EU projects on skills provision for the raw materials sector, in a robust roadmap on skills development (WP2);

- **Definition of a comprehensive competency model** for employment across the raw materials sector (WP2);

- Definition of **best training practices** and reference points for quality assurance and international recognition of training (WP3);

  Immediate **enhancement of existing training programmes**, by filling existing gaps (introducing new topics) and incorporating training best practices (WP3);

- Development of **joint technical and vocational training programmes** for professionals (WP3);

- Designing the **international network** of raw materials training centres, and the corresponding strategic plan and infrastructure (WP4);

- Create an **Online Educational platform** for the raw materials sector (WP4);

- **Expand the international network** of raw materials training centres (WP4 and WP5);

- **Dissemination** and engagement with current and new stakeholders (WP5).
<table>
<thead>
<tr>
<th>OUTPUTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Definition of existing and emerging skill gaps</strong> in the raw materials sector (D1.1, D1.2, D2.1)</td>
</tr>
<tr>
<td><strong>Creation of a ‘Integrated Competency Model’</strong> for employment across the raw materials sector, defining the required mixes of skills, with capacity to proactively anticipate and adapt to changes in the skills mix (D2.3)</td>
</tr>
<tr>
<td><strong>Definition of a ‘International Qualification Framework’</strong> for the raw materials sector, fostering the balance between global demand of professionals (by employers) and the offer of alumnae/graduates from mid-level, technical and professional courses (D3.1, D3.2, D3.3)</td>
</tr>
<tr>
<td><strong>Definition of a ‘Action Plan’</strong> to close skill gaps and enhance existing education and training programmes for professionals (D3.4)</td>
</tr>
<tr>
<td><strong>Creation of a ‘Roadmap’</strong> to tackle medium and long term skills’ needs (D2.2)</td>
</tr>
<tr>
<td><strong>Alignment of training agendas</strong> and curricula in Europe and worldwide, and development of cooperation plans among training providers and between them, the industry and professional organisations (D3.5, D4.4)</td>
</tr>
<tr>
<td><strong>Leveraging international cooperation</strong> on the provision of talent into the raw materials sector by setting an international network of raw materials training centres (D4.1, D4.2)</td>
</tr>
<tr>
<td>Optimized interaction and collaboration among training centres throughout an open online Educational platform (D4.4)</td>
</tr>
<tr>
<td><strong>Promotion of continuous professional development</strong> in the primary and secondary materials sector (D3.3)</td>
</tr>
</tbody>
</table>
INTERMIN will tackle the shortage of a raw materials’ skilled workforce in Europe by advancing a holistic approach, taking into consideration:

1) current and future employers’ needs (assuming different contexts and technological scenarios) and available skills provision;
2) The dynamic balance of demand and educational supply in different world regions; and
3) The alignment of training and industry cyclicity

The methodological approach combines collection of primary data (surveys, interviews) and secondary data (desk research and benchmarking), to advance of a new paradigm for optimized interaction and collaboration between training centres, employers and professionals.

The project will optimize future interaction and collaboration in Europe and internationally with the help of the INTERMIN online educational platform.
European Qualifications Framework
Building blocks of INTERMIN competence model
LOGICAL FRAMEWORK OF THE COMPETENCES CATALOGUE

- Profession
  - Mining job area and subarea
  - Professional Domain
    - Skills:
      - skill a
      - skill b
      - skill c
      - skill d
      - skill e
  - Academic Domain + Postgraduate Training
    - Subjects:
      - subj 1
      - subj 2
      - subj 3
      - subj 4
      - subj 5
      - subj 6
    - Careers & training programs
### Skills Catalogue Questionary

<table>
<thead>
<tr>
<th>Skills</th>
<th>Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface and underground mining</td>
<td>Mining methods, Planning and design</td>
</tr>
<tr>
<td></td>
<td>Ground control and rock mechanics</td>
</tr>
<tr>
<td></td>
<td>Health and safety</td>
</tr>
<tr>
<td></td>
<td>Environmental issues</td>
</tr>
<tr>
<td></td>
<td>Ventilation</td>
</tr>
<tr>
<td>Mineral processing</td>
<td>Etc...</td>
</tr>
</tbody>
</table>

#### Fixed Subjects Related to Knowledge

<table>
<thead>
<tr>
<th>Subject</th>
<th>Included in Syllabus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rock mechanics</td>
<td>✓</td>
</tr>
<tr>
<td>Soil mechanics</td>
<td>✓</td>
</tr>
<tr>
<td>Geotechnics</td>
<td>✗</td>
</tr>
<tr>
<td>Monitoring</td>
<td>✗</td>
</tr>
<tr>
<td>Labo testing</td>
<td>✓</td>
</tr>
</tbody>
</table>
INTERMIN COMPETENCE MODEL

Level 5 - Mineral Exploration

Is able to:
Implement good practice in handling technical documentation | Learn autonomously from textbooks and multimedia tools, and engages in learning discussions in training courses, workshops, fairs, etc. | Think analytically, work under time pressure, work in a group, organise his/her own working time

Key aptitudes:
Ability to communicate clearly verbally and in writing | Mathematical competence and competences in science and technology | General understanding of sustainability and materials efficiency | General understanding of the raw materials value chain | Knowledge and understanding of geological processes in space and time | Digital competence | Knowledge of and commitment to safe working practices

Is ready to:
Perform tasks in a responsive, accurate and timely manner | Establish and maintain good interpersonal relations and undertake initiatives to improve and increase the effectiveness of the tasks being carried out | Train and develop subordinate employees and subcontractors | Perform work with accuracy, thoroughness and under the pressure of time

Knows and understands:
The legal provisions relating to mineral exploration | The methods and dependencies relating to the development and execution of mineral exploration programmes | The application of methods and techniques used in mineral exploration programmes
Level 6 - Mineral Extraction and Processing

Is able to:
- Use geoscience information to generate predictive models
- Prepare non-standard project solutions in accordance with best practice and the requirements of laws and norms
- Respond to changes in the external environment of the mineral extraction and/or processing area
- Transfer his/her knowledge on mineral extraction and/or processing methods and techniques to colleagues, subordinate employees and subcontractors
- Manage teams, plan, forecast and work under pressure
- Autonomously perform functions and actions relating to project management, including:
  - using IT tools in the design and plan process
  - launch and execute activities

Is ready to:
- Assume responsibility, demonstrate innovativeness in the assigned tasks
- Motivate employees to comply with regulations, best practices and professional ethics
- Establish and maintain good interpersonal relations with customers and subcontractors
- Undertake initiatives to improve the effectiveness of activities and the financial results of his/her organisation
- Systematically raise professional qualifications through self-improvement and participation in formal and informal training courses
- Autonomously make decisions

Knows and understands:
- Geological processes in space and time and mechanisms involved
- The complex dependencies between data obtention, data processing, modelling and simulation
- His/her professional and ethical responsibilities
- Communicative English relating to the mineral raw materials sector
IT infrastructure of the INTERMIN portal (https://portal.interminproject.org/)
Institutions Network

Intermin is also a world Wide Network. Our members are Institutions around the world offering mining knowledge programs.

EXPLORE INSTITUTIONS
World Wide Study Programs covering All Training Areas About Mining

Join Intermin Network

If your institution has training programs about Mining, please join Intermin Network and get into the database
The INTERMIN portal allows to make simple searches of the more adequate training by study programs.
<table>
<thead>
<tr>
<th>Study Program</th>
<th>Filtered Areas &amp; Subareas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mining, Environmental, Civil Engineering - Bachelor</td>
<td>Business Management Area</td>
</tr>
<tr>
<td>AGH - University of Science and Technology, Krakow, Poland</td>
<td>1.2 Production analysis and mine optimisation</td>
</tr>
<tr>
<td>Mining Engineering - Master</td>
<td>Geology Exploration Area</td>
</tr>
<tr>
<td>AGH - University of Science and Technology, Krakow, Poland</td>
<td>2.3 Exploration and sampling</td>
</tr>
<tr>
<td>Geotechnical Engineering and Underground Construction - Master</td>
<td>Mining methods Area</td>
</tr>
<tr>
<td>AGH - University of Science and Technology, Krakow, Poland</td>
<td>4.2 Surface mining methods</td>
</tr>
<tr>
<td>Mining Engineering - PhD</td>
<td>Mining equipments Area</td>
</tr>
<tr>
<td>AGH - University of Science and Technology, Krakow, Poland</td>
<td>5.5 Mining software</td>
</tr>
<tr>
<td>Geotechnical Engineering - PhD</td>
<td>Social Performance Area</td>
</tr>
<tr>
<td>AGH - University of Science and Technology, Krakow, Poland</td>
<td>9.4 Grievance management, Prevention &amp; management</td>
</tr>
<tr>
<td>Environmental Engineering - PhD</td>
<td>9.7 Agreements &amp; implementation</td>
</tr>
<tr>
<td>AGH - University of Science and Technology, Krakow, Poland</td>
<td>9.11 Community enterprise development</td>
</tr>
<tr>
<td>Civil Engineering - PhD</td>
<td>1. Week or 5 Weeks: Underground Mining Technology - Professional</td>
</tr>
<tr>
<td>AGH - University of Science and Technology, Krakow, Poland</td>
<td>2.3 Exploration and sampling</td>
</tr>
<tr>
<td>Open Pit Mines - Professional</td>
<td>Mining methods Area</td>
</tr>
<tr>
<td>AGH - University of Science and Technology, Krakow, Poland</td>
<td>4.2 Surface mining methods</td>
</tr>
<tr>
<td>Mineral Processing - Professional</td>
<td>Mining equipments Area</td>
</tr>
<tr>
<td>AGH - University of Science and Technology, Krakow, Poland</td>
<td>5.5 Mining software</td>
</tr>
<tr>
<td>Blasting Techniques - Professional</td>
<td>Social Performance Area</td>
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<tr>
<td>AGH - University of Science and Technology, Krakow, Poland</td>
<td>9.4 Grievance management, Prevention &amp; management</td>
</tr>
<tr>
<td>2 Weeks: Mining, Environmental, Civil Engineering - Other Summer School</td>
<td>9.7 Agreements &amp; implementation</td>
</tr>
<tr>
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<td>9.11 Community enterprise development</td>
</tr>
<tr>
<td>Mineral Resources Engineering - Bachelor</td>
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<tr>
<td>RWTH Aachen University, Aachen, Germany</td>
<td></td>
</tr>
<tr>
<td>Sustainable Resources and Energy Supply - Bachelor</td>
<td></td>
</tr>
<tr>
<td>RWTH Aachen University, Aachen, Germany</td>
<td></td>
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</tbody>
</table>
Search by institutions
Search by geographical location
The portal will also be linked to a dedicated webpage (hyperlink) detailing university programmes (Bachelor and Master) offered by European Universities (GUIDE)
• Populate the training centers database: reach over 1000
• Diffusion of the portal
• Business plan
THANKS VERY MUCH !!

Strike with thy rod while thou beg to thy God