ESCO developments and content management
ETF Training Big Data for Labour market intelligence
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DG Employment, Social Affairs and Inclusion
Unit E2 – Skills and Qualifications
EU goals in a digital labour market

Better link education-training to labour → ensure access to the best opportunities

Ensure transparency of information on skills through systems’ interoperability

Allow open-fair access to information on skills, qualifications, jobs and training

→ avoid monopolisation of data in digital labour market

→ European open standards to counteract risks of proprietary standards
2942 occupations

The occupations pillar is one of the three pillars of ESCO. It organises the occupation concepts in ESCO. It uses hierarchical relationships between them, metadata as well as mappings to the International Standard Classification of Occupations (ISCO) in order to structure the occupations.

Each occupation concept contains one preferred term and any number of non-preferred terms and hidden terms in each of the ESCO languages.

Each occupation also comes with an occupational profile. The profiles contain an explanation of the occupation, the education, skills and competencies needed, a work context and a list of qualifications, skills and competencies.
research manager

Code
1223.2.2

Description
Research managers oversee the research and development functions of a research facility or program or university. They support the executive staff, coordinate work activities, and monitor staff and research projects. They may work in a wide array of sectors, such as the chemical, technical and life sciences sector. Research managers can also advise on research and execute research themselves.

Alternative label
research managers
chief science officer
head laboratory analyst
scientific director
principal research scientist
head of laboratory
research scientist
Essential skills and competences

- communicate in English in a competent way
- cope with challenging demands
- discuss research proposals
- estimate duration of work
- manage operational budgets
- manage research and development projects
- manage staff
- perform scientific research
- provide project information on exhibitions
- report analysis results
- respect cultural differences in the field of exhibition
- study a collection
- study topics
- work independently on exhibitions

Essential Knowledge

- project management
Museum directors oversee the management of the art collections, artefacts, and exposition facilities. They secure and sell works of art on the one hand, and strive to preserve and maintain the art collection of a museum on the other hand. Moreover, they also manage finances, employees, and marketing efforts of the museum.

Alternative label
- museum manager
- museum and heritage director
- art gallery director
- head of museum
- director of collections
- art collection director

Regulatory aspect
To see if and how this occupation is regulated in EU Member States, EEA countries or Switzerland please consult the Regulated Professions Database of the Commission. Regulated Professions Database:
Essential skills and competences
advise on art handling
advise on loans of art work for exhibitions
document museum collection
handle art
implement risk management for works of art
liaise with colleagues
liaise with educational institutions
liaise with managers
liaise with shareholders
maintain catalogue collection
maintain museum records
manage budgets
manage staff
monitor museum environment
plan art educational activities
sell art
supervise art gallery staff

Essential Knowledge
art collections
art history
art-historical values
museum databases

Optional skills and competences
advertise an art collection
analyse packaging requirements
collaborate in the development of marketing strategies
conduct scholarly research
coordinate marketing plan actions
develop classification systems
ensure special requirements for goods in storage
understand collections management systems
Skills

13485 skills / competences

The ESCO skills pillar distinguishes between i) skill/competence concepts and ii) knowledge concepts by indicating the skill type. There is however no distinction between skills and competences. Each of these concepts comes with one preferred term and a number of non-preferred terms in each of the 27 ESCO languages. Every concept also includes an explanation in the form of a definition, examples and a list of other uses.

- A - attitudes and values
- K - knowledge
- L - language skills and knowledge
- S - skills
The ESCO skills pillar distinguishes between i) skill/competence concepts and ii) knowledge concepts by indicating the skill type. There is however no distinction between skills and competences. Each of these concepts comes with one preferred term and a number of non-preferred terms in each of the 27 ESCO languages. Every concept also includes an explanation in the form of description.

The skills pillar of ESCO contains 13,485 concepts structured in a hierarchy which contains four sub-classifications. Each sub-classification targets: (i) a particular skill type; (ii) a specific ESCO language; (iii) a specific ESCO proficiency level; (iv) a specific ESCO code.
create cutting plan

Description

Draw up plans to show how the material will be cut into functional pieces to minimise loss of material.

Alternative label

creation of cutting plan
draw up cutting plan
drawing up cutting plan
cutting plan creation
cutting plan drawing
creating cutting plan

Skill type

skill

Skill reusability level

cross-sector skills and competences

Broader skills/competences

S6.7.1 - cutting materials and drilling holes

Narrower skills/competences

plan carpet cutting

Essential skill/competence of

sawmill operator
table saw operator
stonemason
wood router operator
band saw operator

Optional skill/competence of

carpenter
carpenter supervisor
staircase installer
advise on art handling

Description
Advise and instruct other museum professionals and technicians on how to manipulate, move, store and present artefacts, according to their physical characteristics.

Alternative label
advise on art handling
advising on art handling
give recommendations on art handling
counsel on art handling
offer suggestions on art handling

Skill type
skill

Skill reusability level
sector specific skills and competences

Broader skills/competences
give advice to others
S1.5.3 - advising on products and services

Optional Knowledge
art collections
art history
conservation techniques
fine arts

Essential skill/competence of
exhibition registrar
museum director
art handler

Status
released

Concept URI
http://data.europa.eu/esco/skill/9427e576-743c-4e36-bd73-5f1cb273daf7
Early stage 2011-2017

Development of version 1.0, for use in systems providing services to end users

Close collaboration with stakeholders and Member State experts

Reference Groups for sectoral expertise and online consultation

Sources: national classification systems, reports, research papers, job vacancies
THE EVOLUTION OF ESCO

JULY 2017
ESCO V.1 ONLINE
- 3 Pillars: Skills & Competences, Occupations, Qualifications
- 27 languages
- First full-scale version following 5 piloting and testing versions

OCTOBER 2017
LAUNCH CONFERENCE
- 300 Participants across Europe
- 15 workshops & showcases, 1 keynote speech, 2 panel discussions
- 3 European big data hackathon winners

2018-2021
ONGOING DEVELOPMENT
- Improvements in occupations, skills, knowledge and competences
- Improvements in terminology
- Changes in the requirements of IT applications

END 2021
ESCO V1.1 ONLINE
- Updated reference and language version
- Development of innovative technologies
- Improvements based on content suggestions and structural challenges
CURRENT ESCO IMPLEMENTATION - OCTOBER 2020

- All the European PES by the end of 2021
- 5 Implementations in EU Public Administrations (e.g. EURES, CEDEFOP EUROPASS)
- 5 Education Institutions
- 24 public organisations
- 42 Private Companies
- 4 Public & 1 Private Employment Service use ESCO directly in their system
- 15 + EU-Funded Projects

https://ec.europa.eu/esco/portal
Career learning and development management
Job-matching and job-searching

ESCO IMPLEMENTERS:

JOB-MATCHING & JOB SEARCHING
Statistics and big data analysis
Main ESCO developments

Development of skills hierarchy

Mapping of national taxonomies to ESCO

Communication and outreach

Preparation of ESCO version 1.1

ESCO’s future
Main purposes of the skills hierarchy

Search for and retrieve systematically the 13,485 ESCO skill and knowledge concepts to facilitate

- Compilation of CVs and job vacancies
- Annotation of qualifications
- Mapping national classifications to ESCO
- Creation of skill (self-)assessment tools
- Provision of targeted career guidance
- Matching jobseekers with job vacancies based on skills
The skills hierarchy
A new structure

- Developed by experts in 2019 and published in May 2020
- Structured in 8 groups and 3 levels
- Sector-independent:
  - Tools and equipment used,
  - Type of object on which the work is performed
  - The function or outcome of the task or activity
Mapping to national skill and occupation classifications for interoperability

EURES platform operations for job mobility in Europe

3-year period - until August 2021

Mapping platform with suggested and manual matchings

Technical support with documentation, webinars and country visits

Online community forum for Member States
Communication and outreach

Five Country events in 2019: Greece, Slovenia, Poland, Cyprus and Italy

Study visits to ESCO implementers: Docebo, Boost.rs, Textkernel, Eures and Milch&Zucker

Monitoring of ESCO use by implementers via video calls
ESCO v1.1
Timeline and activities

MARCH – DECEMBER 2020
Updated and improved classification

JANUARY 2021
Open call for feedback (Maintenance Committee and external stakeholders)

FEBRUARY 2021
Consultation with Member States

MARCH – NOVEMBER 2021
• Translation
• Consultation with MS on translations

DECEMBER 2021
ESCO v1.1 goes live
ESCO v1.1
Goals & approach

ESCO needs to be kept up-to-date to reflect new realities in the labour market
- Greening of the economy
- Digitalisation and new technologies
- COVID-19 changes

ESCO requires quality assurance activities (terminological issues, translations, etc.)
<table>
<thead>
<tr>
<th>Type</th>
<th>Label</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital</td>
<td>Occupation</td>
<td>Cloud engineer</td>
</tr>
<tr>
<td>Green</td>
<td>Occupation</td>
<td>Geothermal engineer</td>
</tr>
<tr>
<td>Other</td>
<td>Occupation</td>
<td>Contact tracing agent</td>
</tr>
<tr>
<td>Digital</td>
<td>Skill</td>
<td>Collect cyber defence data</td>
</tr>
<tr>
<td>Green</td>
<td>Skill</td>
<td>Apply procedures and regulations for eco-labelling</td>
</tr>
<tr>
<td>Other</td>
<td>Skill</td>
<td>Manage intellectual property rights</td>
</tr>
<tr>
<td>Digital</td>
<td>Knowledge</td>
<td>Advanced driver assistant systems</td>
</tr>
<tr>
<td>Green</td>
<td>Knowledge</td>
<td>Bioeconomy</td>
</tr>
<tr>
<td>Other</td>
<td>Knowledge</td>
<td>Social bonds</td>
</tr>
</tbody>
</table>
Examples of new occupations

**Alternative fuels engineer**: alternative fuels engineers design and develop systems, components, motors and equipment which replace the use of conventional fossil fuels as main power source of propulsion and power generation with the feature of using renewable energies and non-fossils fuels. They strive to optimise energy production from renewable sources and reduce production expenses and environmental strain.

**Digital marketing professional**: digital marketing professionals contribute to the elaboration of the company’s digital strategy in accordance with its global development plan through data driven methodologies and by measuring and monitoring digital marketing KPIs in order to promptly implement corrective action plans.
Examples of new knowledge concepts

**Social entrepreneurship:** the process of creating, managing and scaling-up a venture in order to address social and cultural challenges.

**Bioeconomy:** the production of renewable biological resources and the conversion of these resources and their waste streams into value added products, such as food, feed, bio-based products and bioenergy.

**Health Technology Assessment:** the assessment of the properties, performance and effects of health technologies aimed at detecting direct and indirect effects of health technologies and their desired and undesired consequences.
Examples of new skills

**Install offshore renewable energy systems:** install systems that generate electrical energy through offshore renewable energy technologies, ensuring compliance with regulations and the correct installation of the power system.

**Reduce tanning emissions:** adjust the formulation of finishing operations according to each type of leather market destination, avoiding VOC emissions.

**Setup media storage and backup systems:** set up and configure media storage systems and related backup systems to ensure maximum data safety, maximum accessibility and low latency of the used media.
Data Science in ESCO

Use an analytical approach based on statistical analysis, data science and machine learning to assist in:

1) Making maintenance of ESCO more efficient
2) Expanding ESCO
3) Making ESCO easier to use by implementers
Managed Classification or Machine Learning Driven?

Best of both worlds:

- Leverage expert prior knowledge
- Interpretable and transparent
- Quality assurance: Member States to verify
- Easy to control and adjust

- More efficiently process (large amounts of) data: faster/cheaper
- Discover new concepts and relations from data: near real-time
- Human-in-the-loop: iteratively improve based on human feedback
Beyond Experts: Mapping other Data Sources

Expert Data:
- Blueprints
- Projects
- European associations
- Companies

Taxonomies:
- Member States

Vacancies

Qualifications

ESCO (European Classification of Skills, Competences, Qualifications and Occupations)
Vacancies: Skills and Tasks Linking to ESCO

Housekeeper
Beachlands Holiday Park - Busselton WA
Part-time, Casual

We are looking for a casual Guest Services (housekeeper) employee to join our team at this great location. You will be required to complete general housekeeping and cleaning tasks for the Beachlands Holiday Park.

Responsibilities & Requirements
Cleaning of accommodation cabins.
Cleaning of amenity blocks and other communal areas to a high standard.
Replacing of linen, towels, and toiletries.
Keeping storage areas well stocked, clean and tidy.
Ensuring you provide a high level of customer service to all guests of the park when required.
Punctuality and excellent time management skills.
Flexible availability due to the nature of the hospitality and tourism industry.
Weekend availability is essential.
Being able to work as part of a team, but also individually.
Maintain a friendly and caring demeanour at all times.

Hours of work are dependent on operational requirements of the business.
Do you think you meet the requirements and responsibilities of the job? We want to hear from you!
Attach an up to date resume with your contact details to your application. All applicants will be considered.

Job Types: Part-time, Casual
Experience:
- Housekeeping: 1 year (Preferred)

- clean camping facilities (0.98)
- clean confined spaces (0.99)
- clean public areas (0.98)
- clean household linens (0.99)
- service rooms (0.98)
- preserve stocked items (0.98)
- maintain storage facilities (0.98)
- communicate with park visitors (0.98)
- assist visitors (0.97)
- meet commitments (0.99)
- manage time (0.99)
- meet commitments in hospitality (0.98)
- work as a team (0.99)
- demonstrate good manners (0.98)
- be attentive (0.98)
Qualifications: Learning Outcomes Linking to ESCO
## Taxonomies: National Classifications

<table>
<thead>
<tr>
<th>German Skill</th>
<th>EN translation</th>
<th>Mapped ESCO skill (EN)</th>
<th>Match type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tierphysiologie</td>
<td>Animal physiology</td>
<td>physiology of animals</td>
<td>Exact</td>
</tr>
<tr>
<td>Tierphysiologie</td>
<td>Animal physiology</td>
<td>neurophysiology of animals</td>
<td>Broad</td>
</tr>
<tr>
<td>Tierphysiologie</td>
<td>Animal physiology</td>
<td>analyse animal locomotion</td>
<td>Close</td>
</tr>
<tr>
<td>Tierphysiologie</td>
<td>Animal physiology</td>
<td>use osteopathic techniques to improve health of animals</td>
<td>Close</td>
</tr>
</tbody>
</table>

### Model
- physiology of animals
- examine animals
- perform veterinary diagnosis
- anatomy of animals
- assess animal's condition
- conduct experiments on animals
- animal biology
- fundamental veterinary sciences
- neurophysiology of animals
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