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Report on the SWOT analysis of training offers/needs in OS/OI/OE/OA and Development of a training curricula for providing OS/OI/OE/OA skills and competences | Date 31-October-2023

# Document Summary

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## Terms, definitions and abbreviated terms

### List of project participants

| Participant organisation name                                | Country |
|--|---------|
| Polytechnic Institute of Setúbal (IPS)                       | PT      |
| St. Pölten University of Applied Sciences (STPUAS)           | AT      |
| Hungarian University of Agriculture and Life Sciences (MATE) | HU      |
| Politehnica University of Timisoara (UPT)                    | RO      |
| University Colleges Leuven Limburg (UCLL)                    | BE      |
| Vidzeme University of Applied Sciences (ViA)                 | LV      |

### Abbreviated terms

OA – Open Access

OE – Open Education

OI – Open Innovation

OS – Open Science

E<sup>3</sup>UDRES<sup>2</sup> – Engaged European Entrepreneurial University as Driver for European Smart and Sustainable Regions

## Executive Summary

This report has the main aim to further develop strategy and curricula regarding **Open Science, Open Innovation, Open Education, Open Access (OS/OI/OE/OA)** in the ENT-R-E-NOVATORS higher education institutions.

This report is part of the work package **WP4 of ENT-R-E-NOVATORS**, the task **T4.2** with the following *objectives*: assess the strengths, weaknesses (gaps) and overall adequacy of OS/OI/OE/OA tools, resources and training against the needs of the E3UDRES2 Ent-r-e-novators project; to facilitate the development of a common strategy for mainstreaming OS/OI/OE practices acting at the levels of training/education and deployment of joint support, to develop a proposal for joint training curricula for providing OS/OI/OE/OA skills and competences.

Open Education, Open Access, Open Science, and Open Innovation are four movements aimed at promoting openness, transparency, and accessibility in various domains and are of importance for the E3UDRES2 Ent-r-e-novators consortium partners. The **SWOT analysis** was used in the WP 4 of this project as a tool to assess the strengths, weaknesses (gaps) and overall adequacy of **OS/OI/OE/OA** tools, resources and training against the needs of the **E3UDRES2 Ent-r-e-novators** project and focusing on our target groups - students, Early Stage Researchers, experienced researchers, professors and other stakeholders - and with a plan for a joint curricula. It was performed based on the results of the activities included in the *D4.1. Report on the identified practices, barriers and needs for strengthening open research, open science and technology transfer between partners*, previous partners experiences and the continued work in this project by the WP4 team.

The partnership shows diversity in its commitment to **Open Education**, with some universities actively participating in Open Education initiatives. UPT is actively involved in a wide range of initiatives and projects. The partnership has various strengths, including diverse commitment levels and active use of OERs. However, there are notable weaknesses, such as the lack of universal policies and limited evaluation. Opportunities lie in policy development, collaboration, and securing financial support, while threats include legal and regulatory barriers and potential resistance to change between the academics of our universities. To address these challenges and capitalise on opportunities, the partnership can consider developing, at partnership level, a joint policy, increasing awareness, and fostering a clearer vision for Open Education.

At some universities there are **Open Access** policies that are a good starting point for those universities who don't have one till now. Some universities have internal funding available to publish Open Access papers, articles, and books, so the others can learn from the forerunners. Open Access faces threats from political shifts affecting copyright and funding, rising economic costs, social preferences for traditional journals and concerns over peer review standards, and technological risks such as data breaches and evolving tech requirements.

Most of the institutions have an **Open Science** policy and strategy, which ensures commitment to and support for Open Science practices. In our consortium, Open Science benefits from political endorsements, international collaborations, European funding, evolving user needs, heightened awareness among stakeholders, and technological advancements in data storage, visibility, and digital repository enhancements.

Some institutions already have an **Open Innovation** policy or strategy and already measure the success of their Open Innovation initiatives through KPI's, rankings and coefficients, but this is limited only to two partners. Our partnership support for Open Innovation provides the consortium, collaboration opportunities, clearer policy formation, and strategic plans, while a unified approach can boost funding, enhance institutional reputation, and align education with market needs; OI Hubs, shared platforms and co-creation labs further facilitate international collaboration and multidisciplinary interactions.

The **E3UDRES2 Ent-r-e-novators proposal for joint training curricula for providing OE/OA/OS/OI** skills and competences is part of a multi-level training program dedicated to all stakeholders from our universities (students, Early-Stage Researchers, experienced researchers, professors and other stakeholders), seeks to empower learners with the ability to leverage open practices, share knowledge, collaborate across disciplines, and drive innovation in their respective fields.

Through this joint training program, learners will gain a comprehensive understanding of the principles and practices of OE/OA/OS/OI, equipping them with the tools and mindset required to engage in open research, develop open educational resources, foster a culture of transparency and collaboration in academia and research, and actively contribute to the innovation ecosystem of open knowledge sharing and innovation. With this training, university stakeholders in our institutions and beyond will receive a unique opportunity to grow towards becoming an *OE/OA/OS/OI designer*, *OE/OA/OS/OI developer* and *OE/OA/OS/OI integrator in formal education and research*. Developing competencies in these areas can lead to more effective participation in open practices,

ultimately contributing to the broader goals of transparency and integrity, collaboration, and accessibility in education, research, and innovation.

For the development of an **OE/OA/OS/OI Joint Training Curricula** we have identified over 100 different courses and modules, some already in use in some of our universities and which will be integrated as OERs, further reading, or full courses. As several of the competences (knowledge, skills, and attitudes) which we have defined for OE/OA/OS/OI are similar across all four areas of education and research, we plan to develop a transversal course and resources - **Foundations for OE/OA/OS/OI** - for an in-depth introduction to the principles, practices, and applications of Open Education, Open Access, Open Science, and Open Innovation. Learners will learn about the history, impact, and global movements of open practices, acquire skills in creating and utilising open resources, understand open licensing, and develop competencies for collaboration and innovation in open environments. Training methods will include independent and asynchronous learning, lectures and guest speakers, interactive workshops, group discussions and peer review, case study analyses.

The **OE/OA/OS/OI Joint Training Curricula** will be available online on a common structure, with access and information from the project **E3UDRES2 Ent-r-e-novators** website.

Based on the results included in this report and activity we can proceed to further the development of Open Education, Open Access, Open Science, and Open Innovation in our universities.



# 1 SWOT analysis of training offers/needs in OS/OI/OE/OA

## 1.1 Methodology

A SWOT analysis is a strategic planning tool that helps individuals or organizations assess their current situation by evaluating their internal strengths and weaknesses, as well as external opportunities and threats. The acronym SWOT stands for Strengths, Weaknesses, Opportunities, and Threats. Strengths are the internal attributes and resources that an entity possesses, which give it a competitive advantage or distinctive edge. Weaknesses, on the other hand, are internal factors that hinder or limit an entity's performance and can include issues like inadequate resources, skills gaps, or inefficient processes. Opportunities are external factors or circumstances that an entity can capitalize on to achieve its goals or expand its reach, such as emerging markets, technological advancements, or changing customer preferences. Threats are external factors or risks that may negatively impact an entity's performance or viability, such as economic downturns, competitive pressures, legal or regulatory changes, or natural disasters.

A **SWOT analysis** is a valuable tool for strategic decision-making and planning. By identifying and examining these four key elements, our university organizations can gain a clearer understanding of their current position and develop strategies to leverage their strengths, address their weaknesses, seize opportunities, and mitigate threats. It provides a structured framework for evaluating both internal and external factors, which can guide a wide range of activities, from educational development and marketing strategies to personal career planning and self-improvement initiatives. Ultimately, a well-executed SWOT analysis can help us make more informed and effective decisions to achieve their objectives and navigate the complexities of the OS/OI/OE environment.

In the higher education context, a SWOT analysis is a valuable strategic planning tool used by universities and colleges to assess their internal strengths and weaknesses, as well as external opportunities and threats. This process helps institutions gain a comprehensive understanding of their current position in the higher education landscape and guides them in making informed decisions to improve and adapt.

The **SWOT analysis** was used in the **E3UDRES2 Ent-r-e-novators** project as a tool to assess the strengths, weaknesses (gaps) and overall adequacy of OS/OI/OE/OA tools, resources and training against the needs of the E3UDRES2 Ent-r-e-novators project. We have performed the SWOT analysis with a view of access and level of knowledge and with a direct analysis focusing on our target groups - students, Early Stage Researchers, experienced researchers, professors and other stakeholders - and with a plan for a joint curricula (digital tools, methodology, delivery methods, evaluation, validation).

The SWOT analysis is separated into two sections, the internal and external factors. The internal factors (strengths and weaknesses) are usually dealt with by a person who knows and works within the institute that is conducting the SWOT analysis. However, the external factors (opportunities and threats) are usually hard to determine since these factors are not fully controlled by the university itself. There are other analytical methods that can be utilised to assist with the task of determining the external factors of the SWOT analysis.

For example, the PEST method is sometimes used alongside the SWOT analysis.

**PEST analysis** stands for Political, Economic, Social, and Technological analysis. These 4 factors, if focused on, could help ease determining the opportunities and threats of OS/OI/OE/OA across different institutes.

THE SWOT analysis and the information included here is based on the results of the activities performed and included in the *D4.1. Report on the identified practices, barriers and needs for strengthening open research, open science and technology transfer between partners*, previous partners experiences and the continued work in this project by the WP4 team.

## 2 Open Education SWOT analysis

### 2.1 Strengths

Strengths:

- The partnership shows diversity in its commitment to Open Education, with some universities actively participating in Open Education initiatives. In particular, UPT, is actively involved in a wide range of initiatives and projects.
- Some universities, such as UPT and MATE, are actively using and supporting OERs, in line with the global trend to recognize the value of OERs and promote open access and open education.
- UPT stands out for organizing workshops and events dedicated to Open Education, indicating a strong commitment to training and professional development, both for students and teachers. Other universities run similar programs, such as IPS.
- The preference for using free and open-source software is a strength, which emphasizes cost and availability.
- The best practices from UPT such as UniCampus and the International Open Education Week Workshops can serve as models for the other partners.
- Open education promotes collaboration among educators and institutions worldwide, leading to the sharing of best practices and resources.

### 2.2 Weaknesses

Weaknesses:

- Lack of clear and dedicated policies or strategies for Open Education in some universities of the partnership, as well as the lack of awareness and understanding of licenses, are weaknesses.
- The different levels of importance assigned to Open Education in the universities' strategic priorities can lead to inconsistencies.
- The lack of evaluation of the effects of Open Education projects and initiatives is a weakness, as it interferes with the ability to measure impact and make informed decisions.
- Several universities from the partnership lack a clear vision for Open Education, which can endanger the growth and development of open education practices.
- Quality can be inconsistent, as not all open educational resources are rigorously reviewed and validated.

- Degrees and certificates from open education may not be as widely recognized or accepted by employers compared to traditional degrees.

## 2.3 Opportunities

Opportunities:

- The emphasis on the importance of policies and initiatives to promote open education in European universities suggests an opportunity for the consortium to develop and implement comprehensive Open Education policies.
- Collaboration within and outside the consortium for Open Education initiatives is an opportunity, as it can lead to shared resources, knowledge, and best practices.
- The opportunity to secure external funding sources, grants, and volunteer support for Open Education activities can help overcome financial challenges.
- The need for increased awareness and evaluation of Open Education initiatives presents an opportunity for the consortium to educate its members and stakeholders.
- Another opportunity lies in the development of training modules on specific open education topics, as these seem to be needed in the partnership.
- Open education can facilitate collaborative research and innovation in education through the sharing of data and insights.
- Open education supports lifelong learning, allowing individuals to acquire new skills and knowledge throughout their lives.
- Learners can tailor their educational experience, choosing from a wide array of resources and courses to meet their specific needs.

### 2.3.1 PEST analysis

Political Opportunities:

- Government policies that promote open education and provide funding or incentives for universities to embrace it can create opportunities for the consortium.

Economic Opportunities:

- Access to external funding sources and grants for open education initiatives can provide economic opportunities for the consortium.

Social Opportunities:

- Social factors, such as the willingness of universities to collaborate within and outside the consortium, can be a social opportunity that fosters knowledge sharing and resource pooling.

Technological Opportunities:

- Embracing technological advancements and integrating open education into broader digital strategies and transformations within higher education institutions can create technological opportunities.

## 2.4 Threats

Threats:

- Legal and regulatory barriers, including a lack of awareness of how to use free and creative common licenses appropriately, pose a threat to the incorporation of more Open Education resources into the curriculum.
- The fact that the teaching language is not English, while most OERs are in English, could limit the accessibility of resources for non-English-speaking students.
- Resistance to change is mentioned as a barrier, which can hinder the adoption of Open Education practices.
- The concern that the proliferation of Open Education courses and resources might limit teachers' income for lecturing in auditoriums presents a potential threat to faculty engagement in open education initiatives.
- There is no joint/common platform for all the partners where to share OERs, trainings, best practices.
- Lack of sustainability for Open education - initiatives may struggle to maintain sustainability and funding support over the long term.
- Poorly developed open educational resources can lead to concerns about the quality and effectiveness of open education.

### 2.4.1 PEST analysis

Political Threats:

- Stringent regulations or legal barriers that hinder the implementation of open education practices could be a political threat.

Economic Threats:

- Economic challenges, including limited internal budgets, may threaten the sustainability of open education projects.

Social Threats:

- Resistance from faculty and staff to the adoption of open education practices due to traditional teaching methods can be a social threat.

Technological Threats:

- Insufficient technological infrastructure or tools for publishing OERs and supporting open education initiatives can pose a technological threat.

To conclude, the partnership has various strengths, including **diverse commitment levels and active use of OERs**. However, there are notable weaknesses, such as the lack of universal policies and limited evaluation. Opportunities lie in policy development, collaboration, and securing financial support, while threats include legal and regulatory barriers and potential resistance to change. To address these challenges and capitalize on opportunities, the partnership can consider developing comprehensive policies, increasing awareness, and fostering a clearer vision for Open Education.

## 3 Open Access SWOT analysis

### 3.1 Strengths

Strengths:

- At some universities there are Open Access policies that are a wonderful starting point for those universities who don't have one till now.
- Development of Open Access mainly through:
  - Implementation of its principles in everyday activities
  - Running events/seminars/ workshops
- There are already Recognized training for Open Access publications, Open Access publishing, finding open education resources, and producing OER as well, that the consortium can use.
- Significant recognition of support towards Open Access publications, Open Access publishing, finding open education resources, and producing OER as well.
- Existence of institutional guidelines for Open Access.
- Knowledge about the existence of a digital institutional repository for storing publications.
- Significant personal usage of OER in teaching or researching.
- Designated network of staff members that deal with Open Access.
- Availability of internal funding to publish Open Access papers, articles, and books (Some universities have internal funding available to publish Open Access papers, articles and books, so the others can learn from the forerunners).

### 3.2 Weaknesses

Weaknesses:

- Many don't know whether there is support for finding and using OER and producing OER.
- Many didn't know or didn't answer to whether their institute provides a tool for publishing OER.
- No knowledge about the existence of a data protection officer.
- No knowledge about Open Access contracts with auto drive publisher.
- Extreme lack of knowledge about the wide range of Open Access tools listed in the report.
- Comments:
  - Anything mentioned in the strengths section has either the highest or close to the highest amount of recognition from the respondents.



- While some points can be within the “strengths”, they can also be a weakness if the criteria match.

## 3.3 Opportunities

### 3.3.1 PEST analysis

Political Opportunities:

- Government subsidies/support for Open Access programs and training.

Economic Opportunities:

- Access to external funding sources and grants for open education initiatives can provide economic opportunities for the consortium.

Social Opportunities:

- Increase awareness and engagement for Open Access amongst students.

Technological Opportunities:

- Improvement of the digital repository technology to increase its availabilities through users.

## 3.4 Threats

### 3.4.1 PEST analysis

Political Threats:

- Shift in the copyright regulation that can tighten the swiftness of Open Access.
- Shift in governmental policies that could limit the support/funding for Open Access.

Economic Threats:

- Increase in costs of using/publishing Open Access (e.x. APC cost).

Social Threats:

- Increased incentive to use traditional journals (for prestigious, security purpose).
- Concerns about the standards and integrity of peer-to-peer review in Open Access.

Technological Threats:

- Data leakages/breaches of Open Access.
- A new technological milestone that will require a heavy funding for keeping Open Access up to date.



## 4 Open Science SWOT analysis

### 4.1 Strengths

Strengths:

- Most of the institutions have an Open Science policy and strategy, which ensures commitment to and support for Open Science practices.
- Institutions initiatives facilitate to implement Open Science practice at institutional level:
- already functioning repositories are in use:
  - Supporting the use of open-source software.
  - Researchers are encouraged to use unique personal persistent identifiers like ORCID.
  - Organizing workshops/events to raise awareness about Open Science practice. Supporting inner/unofficial channels where researchers share their experiences about Open Science.
- Some institutions give Open Data a very high priority in terms of their strategic target areas, which promotes the sharing and accessibility of research data.
- Willingness to navigate and overcome legal and regulatory barriers such as copyright issues and GDPR regulations to support Open Science implementation.
- Some institutions actively support Open Access publishing, for example with their own open access journals, running OJS system, or internal funding mechanisms, keeping in mind the spirit of open science.
- Some institutions give FAIR principles very high priority in terms of their strategic target areas, which promotes the sharing and accessibility of research data.

### 4.2 Weaknesses

Weaknesses:

- Some institutions do not have an Open Science policy or strategy, indicating a lack of formal policies or plans in this area.
- Most of the institutions assign a low or very low priority to the publication of physical research data and methods (eg hardware), which limits the sharing and utilization of these types of resources.
- Not all institutions have formal tools for sharing research data and methods, indicating the limitations of technical resources for Open Science practices.

- In some cases, specific information on training activities related to Open Science is missing, which may indicate that there are no explicit training programs or initiatives in this area.
- The priority of compliance with the FAIR principles (Findable, Accessible, Interoperable, and Reusable) in some university is low, suggesting room for improvement in aligning data practices with these principles.
- Lack of knowledge about the existence of a data protection officer.
- Lack of knowledge about the wide range of OS tools listed in the report.

## 4.3 Opportunities

### 4.3.1 PEST analysis

Political Opportunities:

- Open Science embraced by research funders, universities and EU.
- International collaborations.

Economic Opportunities:

- Funding at European level (Horizon 2020).

Social Opportunities:

- Changing in user needs.
- Increase awareness and engagement for OS amongst students, researchers, citizens.
- Public awareness and support for open science can influence the level of demand and acceptance of open access research.
- Increasing needs on research data sharing.

Technological Opportunities:

- Increasing needs research data storage.
- Increasing needs for visibility and machine readability.
- Increasing needs for using persistent identifiers (ORCID, DOI.).
- Improvement of the digital repository technology to increase visibility/findability.

## 4.4 Threats

### 4.4.1 PEST analysis

Political Threats:

- Access to data's. Fear of the confidential/industrial property data leakage.
- Transparency during the running project.

Economic Threats:

- Funding of Open Science Technology.

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### Social Threats:

- Researchers perspective: concerns about the standards and integrity of peer-to-peer review, sharing data's. They may be wary of sharing sensitive or personal data due to ethical and legal constraints, potential misuse, or concerns over patient or participant privacy.
- Fear of huge amount of administration work (readme file, metadata's of the data's).

### Technological Threats:

- Vulnerable open-source systems.
- Lack of appropriate data management regulations.
- Long-term data storage and usability.

## 5 Open Innovation SWOT analysis

We need to consider that within each institution only a few people within the institutions are involved with Open Innovation.

### 5.1 Strengths

Strengths:

- Some institutions (2) already have an Open Innovation policy (1) or strategy (1), but none of the institutions of the consortium seem to have both.
- Some institution already measures the success of their Open Innovation initiatives through KPI's, rankings and coefficients. The other institutions also acknowledge the importance to develop KPI's and an evaluation policy.
- 1 institution has set an Open Innovation strategy and for those that not implemented Open Innovation strategy yet, it stands very high on the institution's strategic priority areas (5/6). This ensures commitment and support for Open Innovation practices throughout the consortium. All institutions feel the need for Open Innovation and see many advantages thanks to the existing activities/actions within the institutions.
- Some institutions have guidelines, policy and strategy under development, so there is an existing need for a strategy / policy for Open Innovation.
- Most institutions already have activities/actions for Open Innovation. Most known are the living labs, hackathons, start up communities and innovation hubs.
- Some institutions have, although limited, a network of staff in Open Innovation inside the institution, as well with external stakeholders. All institutions acknowledge the importance of networking with external stakeholders, so there is common support for an OI strategy.
- Some institutions are aware of the importance of incorporating Open Innovation in student theses.
- A few institutions have a training/ further education to deep dive into Open Innovation, although limited to webinars, they can give a baseline for our strategy. None of the institutions have a training/ further education to quick start into Open Innovation.
- Most institutions indicate that there is support for Open Innovation, mostly coming from European Projects, however there is no specific budget allocation.

### 5.2 Weaknesses

Weaknesses:

- For Open Innovation most institutions don't have

- a strategy,
- policy,
- institutional guidelines and
- no training or further education for quick start/ deep dive into Open Innovation.

Although there is common support for an Open Innovation strategy

- Although most institutions already have activities and actions for Open Innovation, there is only awareness/ knowledge among a minority of the research staff about these.
- Although most institutions already have activities or actions for Open Innovation, there is only awareness/ knowledge among a minority of the research staff about strategy, policy and guidelines or resources for Open Innovation.
- Lack of knowledge / awareness tends to come from a lack of communication within the institutions.
- Most institutions lack a training or further education for quick start/ deep dive into Open Innovation.
- Most institutions don't know if there is any support in the university for quick start/ deep dive into Open Innovation and some say even that there is no support.
- Some institutions have no network of staff in Open Innovation inside the institution however they do have a (limited) network with external stakeholders.
- Most institutions are unaware of incorporating Open Innovation in student theses, nor consider it a priority.
- Most institutions face a lot of challenges while implementing Open Innovation initiatives. (e.g. GDPR, resources, ...)
- As for support, most institutions indicate that there is no clear budget allocation for Open Innovation.
- Although all institutions acknowledge the importance of networking with external stakeholders, it is mostly seen as volunteer work, so it depends or falls on the motivation of individuals.

## 5.3 Opportunities

### 5.3.1 PEST analysis

Political Opportunities:

- By government subsidies/support for Open Innovation programs and trainings, such as this Ent-r-e-novators project, the consortium has the opportunity to develop a common strategy, policy, guidelines and quick start/ deep dive training in Open Innovation, will enhance collaboration in cooperation between the institutions.

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- Furthermore, the consortium can formulate improvement proposals to government around regulations to overcome limitations/ thresholds to facilitate collaborations between international institutions and meanwhile providing a budget that is more defined for Open Innovation.
- A clear policy and ambitious strategic plan for Open Innovation can guideline a university in future government partnerships to formulate a concrete proposal. As, for example, in the start-up phase of incubators or accelerators. This would have been useful in the proposal from UCLL to the soon-to-be Health Campus incubator.

#### Economic Opportunities:

- A common strategy can create more funding opportunities for Open Innovation from global organizations and private partnerships.
- All institutions can provide resources and support for students (innovative ideas from students into start-ups) and this enhances the institution's reputation and will improve competitiveness/ international rankings. There can be expanded market opportunities.

#### Social Opportunities:

- A common training/ education (professionalization) for Open Innovation will increase awareness and engagement for OI amongst students and staff within all partner institutions.
- Strong guidelines for Open Innovation will create a strong framework to ease global partnerships with industry. Increased and improved collaboration with the working field will make all institutions foster a rich and diverse research environment, making education more aligned with market needs and meanwhile accelerate innovation for the working field.
- Offering students more hands-on and real-world experiences (practical insights), working with multidisciplinary teams (faculty staff, students and industry) will also enhance competitiveness of the institutions in the long run and of course it will also benefit the institution's reputation.
- Community forum will create involvement and motivation.
- Demographic: aging population or changing students' demographics can influence the demand for certain types of education and the relevance of Open Innovation in addressing societal needs. In the long run it can even change mindset and culture.

#### Technological Opportunities:

- Shared platform/ support/ policy/ training will ease the use of the digital infrastructure for Open Innovation for all institutions, creating more international/ global opportunities for Open Innovation.
- Co-creation labs and makerspaces will enhance multidisciplinary collaboration (neutral ground).

## 5.4 Threats

### 5.4.1 PEST analysis

#### Political Threats:

- A shift in government policies could limit the support/funding for higher education and research, this will affect the institution's ability to engage in Open Innovation.

#### Economic Threats:

- Every HEI wants to increase its market share in collaboration contracts with the working field (instead of working together and take advantage of the strength of each party).
- Competition from non-traditional players into the educational space (tech companies offering innovative educational solutions, drawing students away).
- Increasing cost (employees, researchers, infrastructure, tools).
- Intellectual property leakage (strong policy and guidelines is needed).
- During economic downturns securing resources for Open Innovation becomes more challenging.

#### Social Threats:

- GDPR.
- Not enough resources, networking with external stakeholders still seems to be mostly voluntary.

#### Technological Threats:

- A technology/ software that requires a heavy funding to keep the OI up to date. This is often influenced by the economic landscape. These challenges could limit the institution's ability to invest in (new/needed) tech.



# 6 Development of a training curricula for providing OS/OI/OE/OA skills and competences

## 6.1 Training programme

The **E3UDRES2 Ent-r-e-novators proposal for joint training curricula for providing OE/OA/OS/OI skills and competences** is part of a multi-level training program dedicated to all stakeholders from our universities (students, Early-Stage Researchers, experienced researchers, professors and other stakeholders). The **OE/OA/OS/OI Joint Training Curricula** aims to enable Higher Education stakeholders, to empower learners with the ability to leverage open practices, share knowledge, collaborate across disciplines, and drive innovation in their respective fields.

Through this joint training program, learners will gain a comprehensive understanding of the principles and practices of OE/OA/OS/OI, equipping them with the tools and mindset required to engage in open research, develop open educational resources, foster a culture of transparency and collaboration in academia, and actively contribute to the innovation ecosystem. This initiative recognizes the importance of preparing the next generation of academics and professionals with the skills and competences necessary to navigate the evolving landscape of open knowledge sharing and innovation. Moreover, it underscores the critical role of universities in driving positive societal and economic change by fostering openness, inclusivity, and innovation, ultimately contributing to the development of a more open and interconnected global knowledge ecosystem. With this training, university stakeholders in our institutions and beyond will receive a unique opportunity to grow towards becoming an *OE/OA/OS/OI designer*, *OE/OA/OS/OI developer* and *OE/OA/OS/OI integrator in formal education and research*.

## 6.2 OE/OA/OS/OI Competences

Open Education, Open Access, Open Science, and Open Innovation are four movements aimed at promoting openness, transparency, and accessibility in various domains. Based on extensive analyse of several resources, regulation and policies we defined several competences needed for



OE/OA/OS/OI. Our view is that Competencies are broad, long-range outcomes that refer to the general aims or purposes of training, visionary and we use them to develop learning outcomes, which will be addressed in the next step. In order to identify your course competencies, we consider the Domains of Learning: *Knowledge, Skills, and Attitudes*. These competencies will help identify the general facts and principles (Knowledge), procedures and methods (skills), and values and characteristics (Attitudes) that learners will attain from the OE/OA/OS/OI/ Joint Training Curricula.

We identified several competencies associated with each:

### 6.2.1 Open Education competencies

- **Licensing Knowledge:** Understanding open licenses (e.g., Creative Commons) and applying them to educational resources.
- **Content Creation:** Creating open educational resources (OER) that can be freely used, modified, and distributed.
- **Information and media literacy:** Using various tools and platforms to create and distribute open educational content, digital communication and collaboration, digital content creation for open education.
- **Empowering Learners:** Ensuring that open educational resources are accessible to learners with diverse needs, personalisation of educational resources.
- **Co-creation and publishing:** Working with educators, students, and other stakeholders to co-create and share open educational resources, open courses (MOOCs Massive Open Online Courses).
- **Designing credentials:** The ability to apply various learning design principles in developing open courses (MOOCs, SPOOCs, micro-credentials) and for open assessment and validation (open badges)
- **Educational Skills:** Integrating open educational practices into teaching and learning, and fostering a culture of openness in education.
- **Transparency and integrity:** Ensuring a correct and legal professional education use and publishing conduct.
- **Advocacy:** Promoting the adoption and use of open educational resources and practices within educational institutions and communities.

### 6.2.2 Open Access competencies

- **Licensing Knowledge:** Applying appropriate open licenses to research outputs.
- **Research Skills:** Conducting research with the intention of making it openly accessible.

- **Information and media literacy:** managing and developing digital identities, for publishing, distribution and repositories.
- **Publishing and distribution:** Understanding open access publishing models and platforms, and navigating the publication process.
- **Repository Use:** Utilising personal, institutional and subject repositories to share research outputs.
- **Data Management:** Managing research data to make it FAIR (Findable, Accessible, Interoperable, Reusable), using and creating open data.
- **Transparency and integrity:** Ensuring a correct and legal professional research conduct.
- **Advocacy:** Promoting open access to research outputs, including publications, data, and code.

### 6.2.3 Open Science competencies

- **Licensing Knowledge:** Applying appropriate open licenses to research outputs.
- **Research Skills:** Conducting research with the intention of making it openly accessible.
- **Reproducibility:** Ensuring that research is reproducible by providing access to all necessary resources and documentation.
- **Collaboration and co-creation:** Engaging in collaborative research practices, including open peer review and open lab notebooks.
- **Communication:** Effectively communicating research to diverse audiences, including the public.
- **Transparency:** Conducting research in a transparent manner, openly sharing methodologies, data, and findings.
- **Ethics and Integrity:** Upholding ethical standards and integrity in open scientific practices.
- **Technology Literacy:** Mastering various tools and platforms that facilitate open science practices.
- **Advocacy:** Promoting open science to research outputs, including publications, data, and code.

### 6.2.4 Open Innovation competencies

- **Licensing Knowledge:** Applying appropriate open licenses to innovation outputs. Navigating intellectual property issues in open innovation contexts.
- **Collaborative Skills:** Engaging with external partners, including other organizations, researchers, and the public, to co-create and innovate.

- **Problem/Challenge - Solving:** Applying open innovation practices to solve complex problems, understanding the UN SGDs, applying design thinking.
- **Adaptability:** Adapting to the fast-paced and ever-changing nature of open innovation environments.
- **Leadership and Management:** Leading and managing open innovation projects and initiatives.
- **Ethics and Integrity:** Upholding ethical standards and integrity in innovation practices.
- **Advocacy:** Promoting open access to innovation and collaboration for innovative outputs.

Developing competencies in these areas can lead to more effective participation in open practices, ultimately contributing to the broader goals of transparency, collaboration, and accessibility in education, research, and innovation.

## 7 OE/OA/OS/OI/ Joint Training Curricula

In the next step we analyse the similarities between different competences, looking and the skills, knowledge, tools and structures, as well as attitudes needed in the development of a **OE/OA/OS/OI/ Joint Training Curricula**.

As based on our research for finding, identifying, analysing and evaluating different existing courses, information, policies, reports for we have identified over 100 different courses and modules, some already in use in some of our universities and which will be integrated as OERs, further reading or full courses part of our OE/OA/OS/OI/ Joint Training Curricula.

Creating a training program that encompasses Open Education, Open Access, Open Science, and Open Innovation requires a comprehensive approach.

### 7.1 OE/OA/OS/OI/ Joint Training Curricula Learning Outcomes

These are the learning outcomes that learners will achieve upon completion of such a program:

#### 1. Understanding of Open Practices

Outcome: learners will gain a foundational understanding of Open Education, Open Access, Open Science, and Open Innovation, including their histories, principles, and global impact.

#### 2. Understanding of Open Licensing

Outcome: learners will gain proficiency in applying open licenses to various types of educational and research outputs, ensuring proper attribution and usage rights.

### **3. Creation and Utilization of Open Educational Resources**

Outcome: learners will be able to create, modify, and utilize Open Educational Resources (OER) effectively, applying appropriate licensing, and aligning resources with pedagogical goals.

### **4. Mastery of Open Access Publishing**

Outcome: learners will understand the various models of open access publishing and will be able to navigate the process of publishing research in open access journals.

### **5. Data Management, open data and FAIR Principles**

Outcome: learners will learn best practices in data management, of using open data, ensuring that research data are Findable, Accessible, Interoperable, and Reusable.

### **6. Collaboration and Networking in Open Environments**

Outcome: learners will develop skills to collaborate effectively in open environments, building and maintaining networks that support open practices. learners will understand, use and promote the EU, UN, UNESCO policies for OE/OA/OS/OI and their respective platforms.

### **7. Implementation of Open Science Practices**

Outcome: learners will adopt open science practices, including open methodologies, open peer review, and open lab notebooks, contributing to the reproducibility and transparency of research.

### **8. Advocacy for Open Practices**

Outcome: learners will become advocates and integrators for open practices, promoting Open Education, Open Access, Open Science, and Open Innovation within their institutions and broader communities.

### **9. Ethical Considerations in Open Practices**

Outcome: learners will understand the ethical considerations and responsibilities associated with open practices, upholding standards of integrity and accountability.

### **10. Innovation and Problem-Solving in Open Environments**

Outcome: learners will apply open innovation principles to solve complex problems, engaging with external partners and utilising open resources and methodologies.

These outcomes aim to equip learners with the competences (knowledge, skills, and attitudes) described above and necessary to actively participate in and contribute to the EU and global movement towards openness in education, research, and innovation.

## 7.2 OE/OA/OS/OI Joint Training Curricula Structure

As several of the competences (knowledge, skills, and attitudes) for OE/OA/OS/OI are similar across all four areas of education and research we identified the need for a transversal course and resources.

## 7.3 Foundations for OE/OA/OS/OI

A transversal course and resources that provides an in-depth introduction to the principles, practices, and applications of Open Education, Open Access, Open Science, and Open Innovation. Learners will learn about the history, impact, and global movements of open practices, acquire skills in creating and utilising open resources, understand open licensing, and develop competencies for collaboration and innovation in open environments.

### 7.3.1 Licensing and open licensing

A comprehensive understanding of licensing, focusing on open licences in the context of intellectual property, digital content, and innovation. Learners will learn about different types of licences, the legal frameworks governing them, and how to apply open licences in various contexts. Learners will understand the fundamentals of licensing and intellectual property rights, identify and differentiate between various types of open licences, apply open licences to digital content, educational resources, and research outputs, evaluate the implications of licensing choices on accessibility, use, and distribution of content.

#### Introduction to Licensing and Intellectual Property

- Overview of intellectual property (IP) rights and their significance.
- Introduction to licensing and its role in protecting IP.
- Different types of licences and their applications.

#### Understanding Open Licences

- Detailed exploration of open licences, including Creative Commons licences.

- Legal frameworks and terms associated with open licences.
- Benefits and challenges of using open licences.

### Applying Open Licences

- Practical guide on how to apply open licences to different types of content.
- Case studies showcasing the application of open licences in various domains.
- Tools and resources for generating and managing open licences.

### Implications and Best Practices

- Analysing the implications of licensing choices on content accessibility and distribution.
- Best practices for using open licences in education, research, and innovation.

#### 7.3.2 Open Practices

- Introduction to Open Practices
- Overview of Open Education, Open Access, Open Science, and Open Innovation
- Definitions of Open Education, Open Access, Open Science, and Open Innovation
- History of OE/OA/OS/OI
- Principles of OE/OA/OS/OI

#### 7.3.3 Open Access and Open Science

- Different models of open access publishing.
- Navigating the open access process - what it is and how to do it
- Understanding and applying open licenses in science and research
- Principles of transparency and reproducibility
- Open methodologies, FAIR and open peer review
- Media literacy, tools and platforms supporting open science
- Navigating Open Access Publishing, open access journals, predatory journals
- The role of personal, institutional and subject repositories.
- Implement open practices in their research and innovation workflow, including open data, open methods, and open peer review.
- Open Data and open integrations how to share research data openly and responsibly

#### 7.3.4 Open Innovation and Collaboration

- Principles of open innovation



- Collaborative models and networking in open environments
- Innovation Ecosystem Understanding: Knowledge of the innovation landscape, including startup culture, incubators, accelerators, and industry trends.
- Problem/Challenge-Solving: Skills in identifying and defining problems, as well as generating innovative solutions.
- Case studies in open innovation
- Evaluating the impact of open innovation on organisational performance.
- Overcoming challenges and managing risks associated with open innovation.
- Future trends in open innovation and collaborative practices

### 7.3.5 Ethical Considerations and Advocacy

- Ethics in open practices
- Building a culture of openness in the university
- Advocacy for Open Practices - workshops, seminars, courses, integration in the university structures

### 7.3.6 Policies, projects and support structures

- Participate in and contribute to open projects and initiatives.
- Analysing existing open policies in education, research, and innovation.
- Developing and implementing open policies in various contexts
- Engaging with Open Projects, European Open Science Cloud
- Overview of global, EU and regional open projects and initiatives
- Building and sustaining communities of practice in open environments.
- Challenges, opportunities, and future trends in Open Practices

### 7.3.7 Application and Case Studies

- Real-world applications of open practices
- Solving problems using open innovation
- Developing an open project plan
- Developing a roadmap for advancing open practices in university

### 7.3.8 Assessment and evaluation

The assessment and evaluation of learner's progress in the Foundations course will be done through a combination (adapted to each university) of:

- Participation and weekly discussions,
- Case study analysis and presentation
- Group project on developing an open innovation initiative
- Final reflection on the role of open in the university

## 7.4 Educational resources

For each of the Open Education, Open Access, Open Science, and Open Innovation independent courses, resources in different languages of each of the partners will be incorporated and indicated for the courses.

Open educational resources as a collection of readings, videos, and online resources will be provided for each week.

Training Methods will include:

- Independent and asynchronous learning
- Lectures and guest speakers
- Interactive workshops
- Group discussions and peer review
- Case study analyses

A short list of indicated courses are included here:

| <a href="#">Understanding Open Educational Resources (OER)</a>  |  |
|---|--|
| COURSE PROVIDER   | DESCRIPTION  |
| COMMONWEALTH OF LEARNING  | Short course on open educational resources (OER) for a better understanding among educational leaders, administrators, teachers, librarians and students.  |
| MODULES   | OUTCOMES   |
| <ul style="list-style-type: none"> <li>▪ Introduction to Open Educational Resources,</li> <li>▪ Copyright and Open Licensing,</li> <li>▪ Finding and Evaluating OER.</li> </ul> | <ul style="list-style-type: none"> <li>▪ Define OER and give an overview of the international developments related to OER movements,</li> <li>▪ Explain copyrights and licensing issues and differentiate six types of Creative Commons licences,</li> </ul> |



|   |               |              |  | ▪ Find and evaluate OER to use them appropriately                       |          |   |           |                |
|---|---------------|--------------|--|---|----------|---|-----------|----------------|
| SP/IP   | PREREQUISITES | LOGIN        | CERTIFICATION  | PRICE   | DURATION | STATUS  | USABILITY | RECOMMENDATION |
| IP  | NR            | Required (M) | Provided   | NA  | 120 min  | Active  |           | 8              |
| TARGET GROUP  |               |              | COMMENTS   |   |          | LICENSE   |           |                |
| All groups  |               |              | A very short course which covers the legality and practicality sides of OER. Could be useful for all target groups, specifically due to the legality aspect of this course |   |          | Creative Commons Attribution-ShareAlike International license 4.0 |           |                |
| CREATIVE COMMONS CERTIFICATIONS <a href="https://certificates.creativecommons.org/">https://certificates.creativecommons.org/</a> |               |              |  |   |          |   |           |                |
| COURSE PROVIDER   |               |              |  | DESCRIPTION   |          |   |           |                |
| CREATIVE COMMONS  |               |              |  | Org that provides certification in related topics (SHOULD CONTACT THEM) |          |   |           |                |
| MODULES   |               |              |  | OUTCOMES  |          |   |           |                |
| ▪ NA  |               |              |  | ▪ NA  |          |   |           |                |
| SP/IP   | PREREQUISITES | LOGIN        | CERTIFICATION  | PRICE   | DURATION | STATUS  | USABILITY | RECOMMENDATION |
| NA  | NR            | Required     | Provided   | NA  | NA       | Active  |           |                |
| TARGET GROUP  |               |              | COMMENTS   |   |          | LICENSE   |           |                |
| All groups, especially Educators, Librarians, GLAM  |               |              | Certificate for OA and OER, open to everyone, but especially targeting Educators and Librarians  |   |          | Creative Commons Attribution-ShareAlike International license 4.0 |           |                |

| <u>Open Education</u>   |   |
|---|---|
| COURSE PROVIDER   | DESCRIPTION   |
| EDX   | This course is an introduction to learning the tools and practices for Designing Open Educational Resources (OER) |
| MODULES   | OUTCOMES  |
| <ul style="list-style-type: none"> <li>▪ OER Reality &amp; Foundations,</li> <li>▪ Current repositories, identifying and evaluating OER,</li> <li>▪ OER Remix,</li> </ul> | <ul style="list-style-type: none"> <li>▪ A Clear understanding of designing OER materials</li> </ul>              |

| <ul style="list-style-type: none"> <li>▪ OER Video Remix,</li> <li>▪ Developing and Publishing Original Video OER,</li> <li>▪ Developing OER Curated Library.</li> </ul> |               |              |  |   |                           |            |   |                |
|--|---------------|--------------|--|---|---------------------------|------------|---|----------------|
| SP/IP  | PREREQUISITES | LOGIN        | CERTIFICATION  | PRICE   | DURATION                  | STATUS     | USABILITY   | RECOMMENDATION |
| SP   | NR            | Required (E) | Provided   | NA  | 6 week (3 to 4 hrs /week) | Archived   |   | 6              |
| TARGET GROUP   |               |              | COMMENTS   |   |                           |            | LICENSE   |                |
| Students   |               |              | The first part of the course is to define OER and identifying repositories. The second one is to build OER             |   |                           |            | Creative Commons Attribution 4.0 International license            |                |
| <a href="https://findocnet.fi/course/view.php?id=136&amp;section=0#tabs-tree-start">https://findocnet.fi/course/view.php?id=136&amp;section=0#tabs-tree-start</a>        |               |              |  |   |                           |            |   |                |
| COURSE PROVIDER  |               |              |  | DESCRIPTION   |                           |            |   |                |
| FINLAND UNIVERSITIES   |               |              |  | A clear overview of Open Science, Open Access, Open Data and Open Research Process  |                           |            |   |                |
| MODULES  |               |              |  | OUTCOMES  |                           |            |   |                |
| <ul style="list-style-type: none"> <li>▪ Open Science,</li> <li>▪ Open Access,</li> <li>▪ Open Data,</li> <li>▪ Open Research Process</li> </ul>                         |               |              |  | <ul style="list-style-type: none"> <li>▪ Understanding the topics</li> </ul>        |                           |            |   |                |
| SP/IP  | PREREQUISITES | LOGIN        | CERTIFICATION  | PRICE   | DURATION                  | STATUS     | USABILITY   | RECOMMENDATION |
| SP   | NR            | Required     | Provided   | NA  | NA                        | Not Active |   |                |
| TARGET GROUP   |               |              | COMMENTS   |   |                           |            | LICENSE   |                |
| Service, Students, Early-researchers, Expert-researches.   |               |              | While this course is "unofficial" and cannot be credited, it still teaches the different aspects of OA/OS/OD and such. |   |                           |            | Creative Commons Attribution-ShareAlike International license 4.0 |                |
| <a href="https://www.fosteropenscience.eu/node/2331">https://www.fosteropenscience.eu/node/2331</a>  |               |              |  |   |                           |            |   |                |
| COURSE PROVIDER  |               |              |  | DESCRIPTION   |                           |            |   |                |
| FOSTER   |               |              |  | Open Access Publishing – a clear overview about Open Access and Open Data practises |                           |            |   |                |

| MODULES  |               |              |   | OUTCOMES   |          |   |           |                |
|--|---------------|--------------|---|--|----------|---|-----------|----------------|
| <ul style="list-style-type: none"> <li>▪ Open Access</li> <li>▪ Open Access Routes</li> <li>▪ Open Access Definition</li> <li>▪ Gold Route</li> <li>▪ Green Route</li> <li>▪ Open Access Initiatives</li> <li>▪ Open Repositories</li> <li>▪ Open Data Journals</li> <li>▪ Open Data – Open Access Policies</li> </ul> |               |              |   | <ul style="list-style-type: none"> <li>▪ Understand how to publish your work openly and be aware of the advantages,</li> <li>▪ Be able to find an Open Access publisher for your research,</li> <li>▪ Know how to find a suitable repository to provide Open Access and archive your work,</li> <li>▪ Know how to publish Open Access monographs,</li> <li>▪ Understand funders' expectations and policies on Open Access,</li> <li>▪ Be able to secure funding for Article Processing Charges (APCs) where applicable.</li> </ul> |          |   |           |                |
| SP/IP  | PREREQUISITES | LOGIN        | CERTIFICATION   | PRICE  | DURATION | STATUS  | USABILITY | RECOMMENDATION |
| SP   | NR            | Required (M) | NA  | Free   | NA       | Active  |           | 7              |
| TARGET GROUP   |               |              | COMMENTS  |  |          | LICENSE   |           |                |
| <ul style="list-style-type: none"> <li>• Librarians,</li> <li>• Repository Managers,</li> <li>• Students,</li> <li>• Researchers,</li> <li>• Project Managers</li> </ul>   |               |              | Splitted into course and assessment part. For completion you receive badges |  |          | Creative Commons Attribution-ShareAlike International license 4.0 |           |                |
| <b><u>FOSTER</u></b>   |               |              |   |  |          |   |           |                |
| COURSE PROVIDER  |               |              |   | DESCRIPTION  |          |   |           |                |
| FOSTER   |               |              |   | (FOSTER) Many courses related to Open Science (almost everything is covered)   |          |   |           |                |
| MODULES  |               |              |   | OUTCOMES   |          |   |           |                |
| <ul style="list-style-type: none"> <li>▪ Most of all the topics related is covered</li> </ul>  |               |              |   | <ul style="list-style-type: none"> <li>▪ A clear understanding of open science and related topics</li> </ul>   |          |   |           |                |
| SP/IP  | PREREQUISITES | LOGIN        | CERTIFICATION   | PRICE  | DURATION | STATUS  | USABILITY | RECOMMENDATION |
| SP   | NR            | Required (M) | Not Provided  | Free   | NA       | Active  |           | 10             |
| TARGET GROUP   |               |              | COMMENTS  |  |          | LICENSE   |           |                |
| <ul style="list-style-type: none"> <li>▪ Service,</li> <li>▪ Students,</li> <li>▪ Researchers</li> </ul>   |               |              | Requires registration to participate  |  |          | Creative Commons Attribution 4.0 International license            |           |                |
| <a href="https://www.fosteropenscience.eu/node/2334">https://www.fosteropenscience.eu/node/2334</a>  |               |              |   |  |          |   |           |                |

| COURSE PROVIDER   |               |              |   | DESCRIPTION  |          |   |           |                |
|---|---------------|--------------|---|--|----------|---|-----------|----------------|
| FOSTER  |               |              |   | Open business models and responsible research and innovation (RRI) and illustrate how these can foster innovation  |          |   |           |                |
| MODULES   |               |              |   | OUTCOMES   |          |   |           |                |
| <ul style="list-style-type: none"> <li>Open Science</li> <li>Licences</li> <li>Intellectual Property Rights</li> <li>Open Reproducible Research</li> <li>Research Data</li> </ul> |               |              |   | <ul style="list-style-type: none"> <li>Understand key concepts and values of open business models and responsible research and innovation,</li> <li>Know how to plan your innovation activities,</li> <li>Be able to use Creative Commons licenses in business,</li> <li>Understand new technology transfer policies with the ethos of Open Science,</li> <li>Learn how to get things to market faster.</li> </ul> |          |   |           |                |
| SP/IP   | PREREQUISITES | LOGIN        | CERTIFICATION   | PRICE  | DURATION | STATUS  | USABILITY | RECOMMENDATION |
| SP  | NR            | Required (M) | NA  | Free   | NA       | Active  |           | 7              |
| TARGET GROUP  |               |              | COMMENTS  |  |          | LICENSE   |           |                |
| <ul style="list-style-type: none"> <li>Librarians,</li> <li>Repository Managers,</li> <li>Students,</li> <li>Researchers,</li> <li>Project managers</li> </ul>                    |               |              | Splitted into course and assessment part. For completion you receive badges |  |          | Creative Commons Attribution-ShareAlike International license 4.0 |           |                |
| <a href="https://www.fosteropenscience.eu/node/2076">https://www.fosteropenscience.eu/node/2076</a>   |               |              |   |  |          |   |           |                |
| COURSE PROVIDER   |               |              |   | DESCRIPTION  |          |   |           |                |
| FOSTER  |               |              |   | Introduction to the various components and philosophies of Open Science, that can directly enrich each step of the scholarly lifecycle (Open Notebook Science, Open Data, Open Research Software, Open Access)   |          |   |           |                |
| MODULES   |               |              |   | OUTCOMES   |          |   |           |                |
| <ul style="list-style-type: none"> <li>Open Access</li> <li>Open Science</li> <li>Open Data</li> </ul>  |               |              |   | <ul style="list-style-type: none"> <li>Understand the relevance of OS in relation to research integrity, reproducibility and impact,</li> <li>Identify suitable tools to help you embrace OS at each stage of the research lifecycle,</li> <li>Understand the potential of OS in supporting innovation and economic growth.</li> </ul>   |          |   |           |                |
| SP/IP   | PREREQUISITES | LOGIN        | CERTIFICATION   | PRICE  | DURATION | STATUS  | USABILITY | RECOMMENDATION |
| SP  | NR            | Required (M) | NA  | Free   | 210 min  | Active  |           | 7              |

| TARGET GROUP   | COMMENTS   | LICENSE   |
|--|--|---|
| <ul style="list-style-type: none"> <li>▪ Librarians,</li> <li>▪ Repository Managers,</li> <li>▪ Students,</li> <li>▪ Researchers,</li> <li>▪ Project managers</li> </ul> | Splitted into course and assessment part.<br>For completion you receive badges | Creative Commons Attribution-ShareAlike International license 4.0 |
|  |  |   |

<https://www.fosteropenscience.eu/node/2332>

| COURSE PROVIDER  | DESCRIPTION   |
|--|---|
| FOSTER   | Sharing Preprints - how sharing preprints can improve your research and support Open Science  |
| MODULES  | OUTCOMES  |
| <ul style="list-style-type: none"> <li>▪ Open Access</li> <li>▪ Open Access Routes</li> <li>▪ Green Route</li> </ul> | <ul style="list-style-type: none"> <li>▪ Know what preprints are,</li> <li>▪ Be able to find a suitable preprints platform to share your early findings,</li> <li>▪ Understand the pro and cons of sharing preprints,</li> <li>▪ Be aware of how sharing preprints can benefit your progression.</li> </ul> |

| SP/IP | PREREQUISITES | LOGIN        | CERTIFICATION | PRICE | DURATION | STATUS | USABILITY | RECOMMENDATION |
|-------|---------------|--------------|---------------|-------|----------|--------|-----------|----------------|
| SP    | NR            | Required (M) | NA            | Free  | NA       | Active |           | 7              |

| TARGET GROUP  | COMMENTS   | LICENSE   |
|---|--|---|
| <ul style="list-style-type: none"> <li>▪ Librarians,</li> <li>▪ Repository Managers,</li> <li>▪ Students,</li> <li>▪ Researchers,</li> <li>▪ Project managers.</li> </ul> | Splitted into course and assessment part.<br>For completion you receive badges | Creative Commons Attribution-ShareAlike International license 4.0 |
|   |  |   |

OPEN PLATO <https://openplato.eu/blocks/catalog/detail.php>

| COURSE PROVIDER   | DESCRIPTION   |              |               |       |          |        |           |                |
|---|---|--------------|---------------|-------|----------|--------|-----------|----------------|
| OPEN PLATO  | courses ranging from beginner to advances available                                     |              |               |       |          |        |           |                |
| MODULES   | OUTCOMES  |              |               |       |          |        |           |                |
| <ul style="list-style-type: none"> <li>▪ most of the topics covered EOSC</li> </ul> | <ul style="list-style-type: none"> <li>▪ CLEAR UNDERSTANDING OF OPEN SCIENCE</li> </ul> |              |               |       |          |        |           |                |
| SP/IP   | PREREQUISITES   | LOGIN        | CERTIFICATION | PRICE | DURATION | STATUS | USABILITY | RECOMMENDATION |
| SP  | NR  | Required (M) | Provided      | NA    | 120 min  | Active |           | 7              |

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| TARGET GROUP  |               | COMMENTS   |               |  |          |        | LICENSE   |                |
|---|---------------|--|---------------|--|----------|--------|---|----------------|
| At the best cases someone who wants to learn the legal side of OA. so maybe advanced researchers  |               | <p>teaches the financial and ethical implications of OA. Furthermore, training on intellectual property rights in the context of OA.</p> <p>The content about OA is very diluted (at least from my research) which makes the course not the best in efficiency</p> |               |  |          |        | Creative Commons Attribution-ShareAlike International license 4.0 |                |
| ORION> The Information System of Masaryk University <a href="https://is.muni.cz/ekurzy/CEITEC_OS?lang=en">https://is.muni.cz/ekurzy/CEITEC_OS?lang=en</a>                               |               |  |               |  |          |        |   |                |
| COURSE PROVIDER   |               |  |               | DESCRIPTION  |          |        |   |                |
| The Information System of Masaryk University  |               |  |               | About open science   |          |        |   |                |
| MODULES   |               |  |               | OUTCOMES   |          |        |   |                |
| <ul style="list-style-type: none"> <li>▪ introduction to Open Science</li> <li>▪ Open Access</li> <li>▪ Research data</li> <li>▪ Science Communication and Public engagement</li> </ul> |               |  |               | <ul style="list-style-type: none"> <li>▪ A clear understanding of the concept and principles of open science, about publishing in open access .familiar with open science data management practices and able to apply FAIR principles to your research data</li> </ul> |          |        |   |                |
| SP/IP   | PREREQUISITES | LOGIN  | CERTIFICATION | PRICE  | DURATION | STATUS | USABILITY   | RECOMMENDATION |
| SP  | NR            | Required (M)   | Provided      | free   | 16 h     | Active |   | 6              |
| TARGET GROUP  |               | COMMENTS   |               |  |          |        | LICENSE   |                |
| Researchers, Librarians, Repository Managers, Project managers  |               | only thing related to OA is that you will know about publishing in OA. Everything else is closely related to OS  |               |  |          |        | Creative Commons Attribution-ShareAlike International license 4.0 |                |
| OSF <a href="https://osf.io/zjrhu/">https://osf.io/zjrhu/</a>   |               |  |               |  |          |        |   |                |
| COURSE PROVIDER   |               |  |               | DESCRIPTION  |          |        |   |                |
| OSF   |               |  |               | Open Science Workshop Materials of the LMU Open Science Center   |          |        |   |                |
| MODULES   |               |  |               | OUTCOMES   |          |        |   |                |
| <ul style="list-style-type: none"> <li>▪ Open Science Introduction</li> <li>▪ Power Analysis</li> <li>▪ Open Data / Open Materials / Privacy</li> <li>▪ Open Access</li> </ul>          |               |  |               | <ul style="list-style-type: none"> <li>▪ CLEAR UNDERSTANDING OF OPEN SCIENCE</li> </ul>  |          |        |   |                |

| SP/IP   | PREREQUISITES | LOGIN                | CERTIFICATION  | PRICE | DURATION  | STATUS | USABILITY   | RECOMMENDATION |
|---|---------------|----------------------|--|-------|---|--------|---|----------------|
| IP  | NR            | Required (M)         | Provided   | free  |   | Active |   | 8              |
| TARGET GROUP  |               |                      | COMMENTS   |       |   |        | LICENSE   |                |
| Researchers, Librarians, Managers, Project managers   |               | Students, Repository | Especially suited for participants interested in quantitative approaches; not clear if you receive a certificate |       |   |        | Creative Commons Attribution-ShareAlike International license 4.0 |                |
| An introduction to Open Educational Resources (OER) <a href="https://www.open.edu/openlearn/education-development/an-introduction-open-educational-resources-oer/content-section-1">https://www.open.edu/openlearn/education-development/an-introduction-open-educational-resources-oer/content-section-1</a> |               |                      |  |       |   |        |   |                |
| COURSE PROVIDER   |               |                      |  |       | DESCRIPTION   |        |   |                |
| THE OPEN UNIVERSITY(OOPEN LEARN)  |               |                      |  |       | OER advance   |        |   |                |
| MODULES   |               |                      |  |       | OUTCOMES  |        |   |                |
| <ul style="list-style-type: none"> <li>Open Educational Resources,</li> <li>An introduction to OER,</li> <li>Exploring OER,</li> <li>Redesigning some OER,</li> <li>Conclusion and citation.</li> </ul>   |               |                      |  |       | <ul style="list-style-type: none"> <li>"understand and have a better knowledge of some of the choices that practitioners make about ways of applying technologies for a variety of learners across the globe in education, training or professional development.</li> <li>Potential and actual advantages of open educational resources, and how these might benefit learners in a wide range of contexts.</li> </ul> |        |   |                |
| SP/IP   | PREREQUISITES | LOGIN                | CERTIFICATION  | PRICE | DURATION  | STATUS | USABILITY   | RECOMMENDATION |
| SP  | NR            | Required (M)         | Provided   | free  |   | Active |   | 8              |
| TARGET GROUP  |               |                      | COMMENTS   |       |   |        | LICENSE   |                |
| All groups  |               |                      | he courses contents revolve around introducing OER, exploring, redesigning some OER, a quizz about OER           |       |   |        | Creative Commons Attribution-ShareAlike International license 4.0 |                |
| Open Science training course recordings / UNITO / ISPAS Project <a href="https://zenodo.org/record/5536921">https://zenodo.org/record/5536921</a>   |               |                      |  |       |   |        |   |                |
| COURSE PROVIDER   |               |                      |  |       | DESCRIPTION   |        |   |                |
| ZENODO  |               |                      |  |       | Concepts regarding open science, access and European policies (course should be downloaded  |        |   |                |
| MODULES   |               |                      |  |       | OUTCOMES  |        |   |                |



| <ul style="list-style-type: none"> <li>▪ "Scholarly communication,</li> <li>▪ The Open alternative,</li> <li>▪ Open Access to texts,</li> <li>▪ European policies and the EOSC.</li> </ul> |               |                      |  | <ul style="list-style-type: none"> <li>▪ A clear overview of open science , open access and related policies</li> </ul> |          |   |           |                |
|--|---------------|----------------------|--|---|----------|---|-----------|----------------|
| SP/IP  | PREREQUISITES | LOGIN                | CERTIFICATION  | PRICE   | DURATION | STATUS  | USABILITY | RECOMMENDATION |
| SP   | NR            | Required (M)         | Provided   | NA  | 10 h     | Active  |           | 8              |
| TARGET GROUP   |               |                      | COMMENTS   |   |          | LICENSE   |           |                |
| Researchers, Librarians, Managers, Project managers  |               | Students, Repository | Researchers, Students, Librarians, Repository Managers, Project managers |   |          | Creative Commons Attribution-ShareAlike International license 4.0 |           |                |
|  |               |                      |  |   |          |   |           |                |

#### 7.4.1 Open education training programmes resources

| Module                            | Lessons  | Learning outcomes<br>In the end of the module, students will be able to<br>...  |
|-----------------------------------|--|---|
| 1. Foundations of Online Learning | 1.1. Competence-based learning<br><br>1.2. Activity-based learning<br><br>1.3. Learners' engagement and participation<br><br>1.4. Monitoring and feedback<br><br>1.5. Collaboration and teamwork | ... explain the essentials of <b>competence-based learning</b> ,<br>... apply different ways of developing <b>learning activities</b> that address the identified competences and/or learning objectives,<br>... design activities that foster learners' cognitive, emotional, and behavioural <b>engagement</b> and active participation in the learning processes,<br>... use variety of techniques to <b>monitor</b> the learners' progresses, and provide learners with a <b>feedback</b> on-time,<br>... design and implement activities that offer <b>collaboration and teamwork</b> opportunities to the learners, |

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| Module                   | Lessons  | Learning outcomes<br>In the end of the module, students will be able to<br>...  |
|--------------------------|--|---|
|                          | 1.6. Assessment<br><br>1.7. Technology-enhanced learning   | ... integrate different formative and summative assessment methods and tools in courses,<br>... explain the definitions, the importance, and ways to implement <b>technology-enhanced learning</b> and, in particular, online learning.   |
| 2. MOOC<br>Course Design | 2.1. Introduction to MOOCs: specific theoretical considerations<br><br>2.2. Designing online learning scenarios for large cohorts of students<br><br>2.3. Designing learning materials for MOOCs<br><br>2.4. Creating assessment activities for MOOCs<br><br>2.5. Assessing quality of MOOCs | ... understand the specific concepts related to MOOCs in relation to other forms of online learning.<br>... design a course and incorporate learning and assessment activities, which require learners to use digital technologies effectively and responsibly for collaboration and interaction with other learners and instructors.<br>... design a course based on meaningful opportunities for learners to reflect on their learning and the learning processes.<br>... design a course or program that recognizes the prior formal, informal, and non-formal learning, as well as that provides recognition opportunities by others.<br>... identify and develop reliable, valid, and equitable digital assessment strategies, including self- and peer-assessment, in large online courses where learners have different backgrounds, needs, and characteristics.<br>... use different methods to increase the motivation of diverse learners towards learning and completing their courses.<br>... design a learning plan that maximizes the support for learners' engagement, motivation and deep learning in a course or program.<br>... integrate independent learning methods to improve the learners' self-regulated learning skills. |

| Module                     | Lessons  | Learning outcomes<br>In the end of the module, students will be able to<br>...   |
|----------------------------|--|--|
|                            |  | <p>... design courses which are open to anyone who wish to learn using OERs.</p> <p>... design a course or program that fosters community building among learners.</p> <p>... design a methodology and tools to assess the quality of a MOOC.</p>  |
| 3. MOOC content production | <p>3.1. Digital Learning Resources</p> <p>3.2. Locating, assessing the quality, and using Open Educational Resources</p> <p>3.3. Making Good Educational Videos/ Animations / Demos/ Images</p> <p>3.4. Making Good Presentations</p> <p>3.5. Co-creation - OER &amp; Publishing</p> | <p>... apply various learning design principles including multimedia learning design rules to produce open digital learning materials with the appropriate licensing schemes.</p> <p>... in particular, apply guidelines and good practice examples in the creation of high-quality educational videos using different video recording and editing tools.</p> <p>... use other specific tools to produce other types of content like presentations with voice-overs and animated presentations.</p> <p>... assess the quality of open educational resources and use variety of strategies to adopt these resources in MOOCs.</p> |
| 4. MOOC delivery           | <p>4.1. Introduction to MOOC delivery</p> <p>4.2. Major academic MOOC aggregators</p>  | <p>... understand the different possibilities offered by the different MOOC providers.</p> <p>... design and offer a MOOC-based learning process on various online education delivery tools including LMSs, Web Conferencing, Web 2.0 tools.</p> <p>... apply different online communication tools effectively in accordance with the ethical and</p>  |

| Module | Lessons   | Learning outcomes<br>In the end of the module, students will be able to<br>...  |
|--------|---|---|
|        | <p>4.3. Major non-academic MOOC aggregators</p> <p>4.4. Using Learning Management Systems to deliver MOOCs</p> <p>4.5. Using other online education tools to deliver MOOCs</p> <p>4.6. Using synchronous communication tools to interact with and engage learners</p> <p>4.7. Using asynchronous communication tools to interact with and engage learners</p> <p>4.8. Using social networking tools in MOOCs to interact with and engage learners</p> | <p>education principles for establishing better interaction with others in MOOCs or similar online learning environments.</p> <p>... apply pedagogical strategies and methods involving social networking in MOOCs and use them in new situations.</p> <p>... analyze learners' data collected in any learning environment.</p> <p>... assess the effectiveness, efficiency, engagement and endurance of the learning resources and activities to ensure all the learners' access regardless of learners' digital expectations, abilities, uses and misconceptions, as well as contextual, physical or cognitive constraints to their use of digital technologies</p> |

| Module                      | Lessons  | Learning outcomes<br>In the end of the module, students will be able to<br>...  |
|-----------------------------|--|---|
|                             | 4.9. What is learning analytics and how to collect data  |   |
| 5. MOOCs in formal learning | 5.1. Formal vs. non-formal Learning<br><br>5.2. Fields of application:<br>Courses, modules, study programmes<br><br>5.3. Status quo & best practice<br><br>5.4. Quality assurance and content exchange | ... explain the importance and methods to integrate a MOOC in a formal course.<br><br>... assess the effectiveness, efficiency, appeal, and endurance of integrating pedagogical approaches often seen in MOOCs into a formal course of program.<br><br>... design a course that requires the integration of a MOOC as a relevant component of the learning process.<br><br>... design a formal study program that requires the integration of MOOCs into the learning process.<br><br>... design an environment and activities for peer support for professional development of instructors. |

This collection dedicate to OE was developed through the Erasmus+ MODE-IT project and it is available <https://iversity.org/en/courses/introduction-to-mooc-design-and-delivery> and <https://mode-it.eu/open-online-training-program>

Training Methods will include:

- Independent and asynchronous learning
- Lectures and guest speakers
- Interactive workshops
- Group discussions and peer review
- Case study analyses

The OE/OA/OS/OI Joint Training Curricula will be available online on a common structure, with access and information from the **E3UDRES2 Ent-r-e-novators** project website.

## 8 References

(short)

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- Creative Commons (<https://creativecommons.org/>)  
*A website providing detailed information on open licenses and how to use them.*
- Directory of Open Access Journals (DOAJ) (<https://doaj.org/>)  
*A comprehensive directory of open access journals across various disciplines.*
- Open Science Framework (OSF) (<https://osf.io/>)  
*A platform that provides a range of tools to support the entire research lifecycle, promoting openness and reproducibility.*
- European Open Science Cloud (EOSC) (<https://eosc-portal.eu/>)  
*An initiative that provides a range of services and resources to support open science in Europe.*
- Open Innovation Network (<https://www.openinnovation.net/>)  
*A platform for sharing knowledge and best practices in open innovation.*
- Open Education Global (<https://www.oeglobal.org/oe-resource/>)  
*A collection of OERs and initiatives in OE.*
- MERLOT (<https://www.merlot.org/merlot/index.htm>)  
*MERLOT collection consists of tens of thousands of discipline-specific learning materials, learning exercise as OERs.*





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