Funded by the
Erasmus+ Programme
of the European Union

ENREAC-HEI

ENhance REseArChers and HEI staff skills

Risultati ricerca

Enhance researchers and HEI staff's skills and competences

Il sostegno della Commissione europea alla produzione di questa pubblicazione non costituisce un'approvazione del contenuto, che riflette esclusivamente il punto di vista degli autori, e la Commissione non può essere ritenuta responsabile per l'uso che può essere fatto delle informazioni ivi contenute.

L'IDEA DIETRO IL PROGETTO

Il progetto si basa sulle osservazioni del Working Group on Education and Skills under Open Science che nel luglio 2017, in un report divulgato con il supporto dell'UE dal titolo *Providing researchers with the skills and competencies they need to practise Open Science*, suggeriva che le "Open Science skill diventino parte integrante dell'istruzione e della formazione a tutti i livelli, dalla scuola primaria fino all'università, nonché della formazione professionale e continuativa".

I contenuti innovativi del programma ENREAC-HEI consentiranno a studenti universitari di ogni corso di studi di sviluppare autonomia, pensiero critico, capacità di problem-solving così da essere più efficaci sul lavoro, aumentando le proprie possibilità di impiego, successo professionale e divenendo quindi cittadini più attivi.

LE SKILL ESSENZIALI PER I RICERCATORI

Nella fase preparatoria del progetto i partner hanno svolto una ricerca volta a considerare i progetti e i programmi di formazione già esistenti destinati al miglioramento delle abilità legate alla ricerca. In genere, tali abilità riflettono il processo di ricerca e includono alcune competenze necessarie allo svolgimento di attività di ricerca. Sono stati identificati cinque stadi del processo di ricerca: concettualizzazione, realizzazione, ricerca, interpretazione e utilizzo. Ogni fase dipende da determinate abilità di ricerca, necessarie per individuare le domande che stanno alla base della ricerca, sapere come strutturarla e come analizzare e scegliere i possibili approcci critici.

Definizione e descrizione delle skill

I partner hanno stabilito due principali ambiti di ricerca:

Il ***Vitae Researcher Development Framework (RDF)***, strutturato in tre settori riguardanti conoscenze, comportamenti e caratteristiche dei ricercatori. Esso fa riferimento all'estensione delle conoscenze, le abilità intellettuali, le tecniche e gli standard professionali necessari a fare ricerca, le qualità personali e le capacità di collaborare con gli altri e garantire un ampio impatto della ricerca. Ciascuno di questi ambiti si suddivide in quattro sotto settori e relativi descrittori.

Il sostegno della Commissione europea alla produzione di questa pubblicazione non costituisce un'approvazione del contenuto, che riflette esclusivamente il punto di vista degli autori, e la Commissione non può essere ritenuta responsabile per l'uso che può essere fatto delle informazioni ivi contenute.

- Ambito A: Conoscenze e capacità intellettuali: conoscenze, abilità intellettuali e tecniche per la ricerca.
- Ambito B: Efficacia personale: le caratteristiche e attitudini personali per essere un ricercatore efficace.
- Ambito C: organizzazione e gestione della ricerca: conoscenza degli standard professionali per la ricerca.
- Ambito D: coinvolgimento, influenza e impatto: conoscenze e skill per la collaborazione e l'impatto della ricerca.

Research Skill Development Framework (Willison, O'Regan, 2006/2013), per lo sviluppo esplicito, coerente e incrementale delle skill legate alla ricerca. Tiene in considerazione i seguenti 6 aspetti:

- Researchers embark & clarify – iniziare la ricerca essendo in grado di chiarire che tipo di conoscenze siano richieste, tenendo conto di tutti gli aspetti etici, culturali e sociali.
- Researchers find & generate – Reperire e produrre dati e informazioni usando i metodi adeguati.
- Researchers evaluate & reflect – determinare il livello di credibilità delle fonti selezionate, delle informazioni e dei dati generati, ricorrendo anche a processi metacognitivi.
- Researchers organise & manage – organizzare le informazioni e i dati in modo da reperire temi e strutture ricorrenti, gestire team e processi di ricerca.
- Researchers analyse & synthesise – analizzare informazioni e dati in modo critico, sintentizzando le nuove conoscenze in modo facilmente comprensibile.
- Researchers communicate & apply – discutere, ascoltare, presentare e portare a termine processi, comprendendo le applicazioni della ricerca, rispondendo al feedback, tenendo conto delle problematiche etiche, culturali e sociali.

Suggerimenti per lo sviluppo del corso online ENREAC HEI

Durante la fase di ricerca e analisi svolta in ciascun paese partner, i membri del consorzio hanno definito i seguenti suggerimenti per lo sviluppo del corso online sulle skill essenziali per i ricercatori:

- Il corso online tiene conto delle buone pratiche accademiche e non accademiche.

Il sostegno della Commissione europea alla produzione di questa pubblicazione non costituisce un'approvazione del contenuto, che riflette esclusivamente il punto di vista degli autori, e la Commissione non può essere ritenuta responsabile per l'uso che può essere fatto delle informazioni ivi contenute.

- Evitare di caratterizzate il corso in modo esclusivamente accademico, in quanto già esistente in altre fonti.

- Il corso deve includere le seguenti skill e abilità:

  - ✓ Saper definire lo scopo di una ricerca
  - ✓ Saper contestualizzare un problema sotto il profilo teorico e saper analizzare il suo stato dell'arte
  - ✓ Essere in grado di creare strumenti per la raccolta dati
  - ✓ Saper reperire dati in modo efficace
  - ✓ Saper impiegare gli strumenti digitali per l'analisi dei dati
  - ✓ Sviluppare pensiero critico
  - ✓ Avere capacità di problem-solving
  - ✓ Sviluppare le soft skills, in particolar modo la resilienza
  - ✓ Sviluppare capacità di scrittura scientifica e di supervisione
  - ✓ Ideare attività
  - ✓ Sviluppare capacità di leadership nella gestione dei programmi di ricerca e nel project management (gestione del tempo, gestione del budget)
  - ✓ Capacità di raccogliere fondi per la ricerca
  - ✓ Sviluppare capacità di comunicazione e presentazione
  - ✓ Potenziamento delle pratiche Open Acess e Open Science
  - ✓ Sviluppare capacità di innovazione, indipendenza, intraprendenza e pensiero creativo
- Le skill selezionate verranno raggruppate in cluster per consentire ai partner di creare il corso in modo logico, sequenziale e privo di ripetizioni.

INTRODUZIONE AL CORSO ONLINE SULLE SKILL OPEN SCIENCE

Lo scopo di questa sezione è quello di presentare le buone pratiche, tecniche, norme e linee guida internazionali finalizzate alla promozione, disseminazione e insegnamento dell'Open Science.

Cos'è Open Science?

'Open Science' può essere definito in vari modi, tra cui :

- Un approccio [1]
- Un insieme di concetti [2]
- Un modello di pensiero [3]
- Un fenomeno dirompente [4]

Il sostegno della Commissione europea alla produzione di questa pubblicazione non costituisce un'approvazione del contenuto, che riflette esclusivamente il punto di vista degli autori, e la Commissione non può essere ritenuta responsabile per l'uso che può essere fatto delle informazioni ivi contenute.

Vicente-Saez & Martinez-Fuentes [4] ritengono che l'assenza di una definizione univoca del termine '***Open Science***' sia alla base della scarsa conoscenza sull'argomento da parte di ricercatori, soggetti politici e cittadini. Gli autori stessi propongono una definizione di Open Science basata sullo studio della letteratura scientifica sull'argomento. In particolare, essi suggeriscono che l'Open Science venga definita come "***conoscenza trasparente e accessibile condivisa e sviluppata attraverso reti collaborative***".

I ricercatori individuano, identificano e applicano l'Open Science come un insieme di principi, procedure e norme che includono [5] [6]:

- Open access nella letteratura accademica
- Open access per i dati di ricerca
- Open access per i codici di programmazione (open source software)
- Open access per i processi scientifici

L'applicazione di questi principi assicura che i parametri fondamentali della ricerca scientifica (***trasparenza***, ***accessibilità e riproducibilità dei risultati***) siano rispettati [7].

L' Open Science comporta anche i seguenti vantaggi scientifici, economici e sociali:

- Maggiore efficacia della ricerca
- Migliore conoscenza del processo scientifico
- Promozione del rigore accademico e miglioramento della qualità della ricerca
- Facilitazione della creazione di nuovi soggetti di ricerca
- Promozione del rapporto tra società, cultura e ricerca scientifica
- Maggiore impatto economico e sociale della scienza
- Maggior valore attribuito alla proprietà intellettuale
- Promozione dei vantaggi per le istituzioni

Tali vantaggi dimostrano che Open Science non si limita al libero accesso ai dati e alle pubblicazioni, ma all'apertura dell'intero processo scientifico, rinforzando quindi il concetto di responsabilità scientifica sociale [6].

Il sostegno della Commissione europea alla produzione di questa pubblicazione non costituisce un'approvazione del contenuto, che riflette esclusivamente il punto di vista degli autori, e la Commissione non può essere ritenuta responsabile per l'uso che può essere fatto delle informazioni ivi contenute.

Conclusioni: insegnare Open Science

L'innovazione tecnologica ha reso l'applicazione dei principi Open Science nelle attività di ricerca sia necessaria che fattibile. L'implementazione pratica di tale approccio non è regolata *per se*, ma è indirizzata da un numero notevole di direttive, norme e linee guida proposte sia da soggetti politici che accademici.

Possono esserne dedotte le seguenti conclusioni:

I. Dal punto di vista dei bisogni, è unanimemente riconosciuto che la formazione sui concetti Open Science sia necessaria per la società tutta, non soltanto per i ricercatori. Ciò è esplicitamente affermato nell'**OECD Policy Paper**.

II. Da un punto di vista normativo, la Commissione Europea ha recentemente pubblicato un documento (tramite l'OSS Working Group) che fornisce le linee guida per la formazione su Open Science.

III. Dal punto di vista dell'implementazione, ci sono vari corsi di formazione basati su concetti Open Science. Tuttavia, il comune denominatore di tutte le attività di formazione e delle normative esistenti è che esse tendono a concentrarsi sui ricercatori o altri stakeholder dell'ambito come archivisti, bibliotecari, ricercatori di ambito legislativo e politico, ma non si rivolgono agli studenti universitari. Pertanto, il contributo (e la sfida) di **ENREAC-HEI** sarà quella di adattare e potenziare i metodi di insegnamento, le linee guida, i curricula e i materiali già esistenti in modo da garantire che il corso 'Introduzione alle Skill di Open Science' (O3) sia adeguato al target group del progetto, ovvero gli studenti universitari.

Il sostegno della Commissione europea alla produzione di questa pubblicazione non costituisce un'approvazione del contenuto, che riflette esclusivamente il punto di vista degli autori, e la Commissione non può essere ritenuta responsabile per l'uso che può essere fatto delle informazioni ivi contenute.

ANNEXES

Full list of the research skills

RESEARCH SKILL	DEFINITION	SOURCE
Analytical thinking	Analytical thinking is the capability of developing abstract thought, logical thinking and reasoning.	Busana, Clara, Banterle, Alberto, (2007). Capacità trasversali: elemento cruciale nel profilo di competenze per la ricerca. Università degli Studi di Trieste.
Analytical & synthesizing skills	Analyse information/data critically and synthesise new knowledge to produce coherent individual/team understandings	Willison, John, and Kerry O'Regan. 2006/2013. "Research Skill Development Framework." http://www.adelaide.edu.au/rsd/ Accessed September 15, 2015.
Critical thinking	The ability to evaluate and synthesize information that enables one to answer stated research questions, test hypotheses, and evaluate outcomes.	Naseem, J., & Fleming, L. (2018). Connecting graduates with the real world: Transferring research-based skills to the workplace. In Tong V., Standen A., & Sotiriou M. (Eds.), Shaping Higher Education with Students: Ways to Connect Research and Teaching (pp. 224-241). London: UCL Press. Retrieved from http://www.jstor.org/stable/j.ctt21c4tcm.35
	Being able to evaluate your work and that of others, making judgments about the value of information and drawing conclusions from data	Vitae Researcher Development Framework (Vitae is the global leader in supporting the professional development of researchers, experienced in working with institutions as they strive for research excellence, innovation and impact. Part of The Careers Research and Advisory Centre (CRAC) Ltd with nearly 50 years' experience in enhancing the skills and careers of researchers.) https://www.vitae.ac.uk/researchers-professional-development/about-the-vitae-researcher-development-framework
	A researcher can: understand and complete a literature review, identify the gaps in the literature, discuss and debate theoretical concepts in the domain, generate new research ideas and suggest new directions for a research.	Joint Information Systems Committee (JISC) and The Open University. (n.d.). Research Skills and Techniques. Retrieved from: https://cloudworks.ac.uk/cloudscape/view/2018 EURAXESS - Researchers in Motion. (n.d.). Retrieved from: https://euraxess.ec.europa.eu/

Il sostegno della Commissione europea alla produzione di questa pubblicazione non costituisce un'approvazione del contenuto, che riflette esclusivamente il punto di vista degli autori, e la Commissione non può essere ritenuta responsabile per l'uso che può essere fatto delle informazioni ivi contenute.

		Moriarty, B. (2018). Research skills for teachers: From research question to research design. Allen & Unwin, Australia. Allison, B., Hilton, A., O'Sullivan, T., Owen, A., & Rothwell, A. (2016). Research skills for students. Routledge. European Comission. (2011). Towards a European Framework for Research Careers. Directorate B- European Research Area Skills.
	The ability to recognise inferential connections holding between statements, where this would include the ability to understand the possibility that what we believe might be false and the ability to identify the sorts of evidence that would undermine our belief	Gyuris E. (2018), Evaluating the effectiveness of postgraduate research skills training and its alignment with the Research Skill Development framework, Journal of University Teaching & Learning Practice, Volume 15 (4), 5: https://ro.uow.edu.au/jutlp/vol15/iss4/5
Critical reviewing	A researcher can: think of alternative ways of interpreting evidence, compare methods and findings, specify further work in a field, identify limitations in others' research, contribute to research discussions with constructive criticism and informed questions.	Vitae Researcher Development Framework (Vitae is the global leader in supporting the professional development of researchers, experienced in working with institutions as they strive for research excellence, innovation and impact. We are a non-profit programme, part of The Careers Research and Advisory Centre (CRAC) Ltd with nearly 50 years' experience in enhancing the skills and careers of researchers.) https://www.vitae.ac.uk/researchers-professional-development/about-the-vitae-researcher-development-framework
Critical analysis & Problem Solving	Able to deconstruct and analyse problems or complex situations. To find solutions to problems through analyses and exploration of all possibilities using appropriate methods, resources and creativity.	Karantzas, G. (2013), Enhancing critical analysis and problem-solving skills in undergraduate psychology: An evaluation of a collaborative learning and problem-based learning approach, Australian Journal of Psychology 65(1):38-45, Joint Information Systems Committee (JISC) and The Open University. (n.d.). Research Skills and Techniques; https://cloudworks.ac.uk/cloudscape/view/2018
Problem solving	Working without "a right answer" and devising strategies to work towards a solution	Vitae Researcher Development Framework (Vitae is the global leader in supporting the professional development of researchers, experienced in working with institutions as they strive for research excellence, innovation and impact. We are a non-profit programme, part of

Il sostegno della Commissione europea alla produzione di questa pubblicazione non costituisce un'approvazione del contenuto, che riflette esclusivamente il punto di vista degli autori, e la Commissione non può essere ritenuta responsabile per l'uso che può essere fatto delle informazioni ivi contenute.

		The Careers Research and Advisory Centre (CRAC) Ltd with nearly 50 years' experience in enhancing the skills and careers of researchers.) https://www.vitae.ac.uk/researchers-professional-development/about-the-vitae-researcher-development-framework
Research design (Innovation, Problem Solving, Resourcefulness)	Research- design skills relate to strategic aptitudes required in solving problems at work. These can enable a graduate employee to identify and review a problem, generate solutions to the problem and then create new opportunities.-	Naseem, J., & Fleming, L. (2018). Connecting graduates with the real world: Transferring research-based skills to the workplace. In Tong V., Standen A., & Sotiriou M. (Eds.), Shaping Higher Education with Students: Ways to Connect Research and Teaching (pp. 224-241). London: UCL Press. Retrieved from http://www.jstor.org/stable/j.ctt21c4tcm.35
Problem solving abilities	Problem solving is the ability of solving problems finding specific methods and techniques.	OECD (2012). Transferable Skills Training for Researchers. OECD Publishing
Effective management and organization	Researchers develop the capability of realising ideas, identifying objectives and priorities, organising resources and planning processes.	Lisimberti, C. (2017). La formazione alla ricerca nel dottorato tra competenze disciplinari e transferable skills. In L. Ghirotto (Eds.), Formare alla ricerca empirica in educazione (pp. 52-61). Dipartimento di Scienze per la Qualità della Vita – Alma Mater Studiorum – Università di Bologna.
Project management	The practice of initiating, planning, executing, controlling, and closing the work to achieve specific goals and meet specific success criteria at the specified time.	Naseem, J., & Fleming, L. (2018). Connecting graduates with the real world: Transferring research-based skills to the workplace. In Tong V., Standen A., & Sotiriou M. (Eds.), Shaping Higher Education with Students: Ways to Connect Research and Teaching (pp. 224-241). London: UCL Press. Retrieved from http://www.jstor.org/stable/j.ctt21c4tcm.35
Management skills	Manage teams and research processes	Willison, John, and Kerry O'Regan. 2006/2013. "Research Skill Development Framework." http://www.adelaide.edu.au/rsd/ Accessed September 15, 2015.
Organizational skills	Organise information and data to reveal patterns and themes	Willison, John, and Kerry O'Regan. 2006/2013. "Research Skill Development Framework." http://www.adelaide.edu.au/rsd/ Accessed September 15, 2015.
Research Governance and Organization	Professional Conduct and Research Management	Career and Research Skills Training https://www.adelaide.edu.au/carst/program-structure/research-skills/

Il sostegno della Commissione europea alla produzione di questa pubblicazione non costituisce un'approvazione del contenuto, che riflette esclusivamente il punto di vista degli autori, e la Commissione non può essere ritenuta responsabile per l'uso che può essere fatto delle informazioni ivi contenute.

Team work	The skill to work well with a group of people to achieve a shared goal or outcome in an effective way.	Naseem, J., & Fleming, L. (2018). Connecting graduates with the real world: Transferring research-based skills to the workplace. In Tong V., Standen A., & Sotiriou M. (Eds.), Shaping Higher Education with Students: Ways to Connect Research and Teaching (pp. 224-241). London: UCL Press. Retrieved from http://www.jstor.org/stable/j.ctt21c4tcm.35
Leadership	The influence of one or more persons on the research-related behaviour, attitudes or intellectuality of another/others.	Evans L., (2014) What is effective research leadership? A research informed perspective, Higher Education Research & Development, 33:1, 46-58, https://doi.org/10.1080/07294360.2013.864617
Scientific leadership	Absent	Foundation for Science and Technology (2017). Evaluation guide. Stimulus of scientific employment, individual support, 2017 call. Retrieved from file:///C:/Users/bento/Desktop/ENREAC_Até%2021%20jan%202019/Guiao_de_Avaliacao.pdf
Communication (written and audience focused communication)	The ability to convey information to another effectively and efficiently Writing practice is widely believed to be essential in developing not just communication skills but also skills in critical thinking and scientific reasoning (Dowd et al. 2018). At the same time, audience-focused communication skills are increasingly key to the acquisition of research funding, public engagement and the building and maintenance of multidisciplinary teams. For these reasons, expertise in communicating to a wide range of audiences is a highly valued and complex (Proske et al. 2012) skill. Expert academic writers achieve a high level of proficiency as a result of many years of practice and engagement. While acquisition of written communication skills in particular is central to a student's academic Discuss, listen, write, present and perform the processes, understandings and applications of the research, and respond to feedback, accounting for ethical, cultural, social and team (ECST) issues.	Gyuris E. (2018), Evaluating the effectiveness of postgraduate research skills training and its alignment with the Research Skill Development framework, Journal of University Teaching & Learning Practice, Volume 15 (4), 5: https://ro.uow.edu.au/jutlp/vol15/iss4/5 Willison, John, and Kerry O'Regan. 2006/2013. "Research Skill Development Framework." http://www.adelaide.edu.au/rsd/ Accessed September 15, 2015.
Handling data	The researcher needs to organise his own data storage and design a specific database, keeping record of all the research processes he is involved in.	Fabbris, L. (2006). Modelli e metodi per abbinare profili formativi e bisogni di professionalità di comparti del terziario avanzato. Università di Trieste.
Handling Data and Data Analyses	Evaluating data using analytical and logical reasoning to examine each component of the data provided	

Il sostegno della Commissione europea alla produzione di questa pubblicazione non costituisce un'approvazione del contenuto, che riflette esclusivamente il punto di vista degli autori, e la Commissione non può essere ritenuta responsabile per l'uso che può essere fatto delle informazioni ivi contenute.

Data Collection and Analysis	A researcher can: identify data collection tools appropriate for a research, conduct interviews, prepare questionnaires, use appropriate tools for the data analysis phase.	Joint Information Systems Committee (JISC) and The Open University. (n.d.). Research Skills and Techniques. Retrieved from: https://cloudworks.ac.uk/cloudscape/view/2018 EURAXESS - Researchers in Motion. (n.d.). Retrieved from: https://euraxess.ec.europa.eu/ Moriarty, B. (2018). Research skills for teachers: From research question to research design. Allen & Unwin, Australia. Allison, B., Hilton, A., O'Sullivan, T., Owen, A., & Rothwell, A. (2016). Research skills for students. Routledge. European Comission. (2011). Towards a European Framework for Research Careers. Directorate B- European Research Area Skills.
Recognizing research problems	A researcher can: identify the research questions addressed in research papers, clearly define research questions and relevant hypotheses, and explain the sorts of evidence and/or arguments that are seen as valid in the field.	Joint Information Systems Committee (JISC) and The Open University. (n.d.). Research Skills and Techniques. Retrieved from: https://cloudworks.ac.uk/cloudscape/view/2018 EURAXESS - Researchers in Motion. (n.d.). Retrieved from: https://euraxess.ec.europa.eu/ Moriarty, B. (2018). Research skills for teachers: From research question to research design. Allen & Unwin, Australia. Allison, B., Hilton, A., O'Sullivan, T., Owen, A., & Rothwell, A. (2016). Research skills for students. Routledge. European Comission. (2011). Towards a European Framework for Research Careers. Directorate B- European Research Area Skills.
Research Methods	A researcher can: recognize the differences between methods and techniques in the domain, explain the applicability and limitations of a method and design an appropriate empirical study.	Joint Information Systems Committee (JISC) and The Open University. (n.d.). Research Skills and Techniques. Retrieved from: https://cloudworks.ac.uk/cloudscape/view/2018 EURAXESS - Researchers in Motion. (n.d.). Retrieved from: https://euraxess.ec.europa.eu/ Moriarty, B. (2018). Research skills for teachers: From research question to research design. Allen & Unwin, Australia. Allison, B., Hilton, A., O'Sullivan, T., Owen,

Il sostegno della Commissione europea alla produzione di questa pubblicazione non costituisce un'approvazione del contenuto, che riflette esclusivamente il punto di vista degli autori, e la Commissione non può essere ritenuta responsabile per l'uso che può essere fatto delle informazioni ivi contenute.

		A., & Rothwell, A. (2016). Research skills for students. Routledge. European Comission. (2011). Towards a European Framework for Research Careers. Directorate B- European Research Area Skills.
Research interviews (social skills)	Skills in understanding and managing research interviews.	Allison, B., Hilton, A. et al (2016). Research interviews. In Research Skills for Students (100-124). London: Routledge
Questionnaire design	The skill to plan, design and distribute a questionnaire for collecting primary data.	Allison, B., Hilton, A. et al (2016). Questionnaire design. In Research Skills for Students (69-98). London: Routledge
Ethical competence	The researcher's ability to develop an ethical approach to research, work and team working.	Busana, Clara, Banterle, Alberto, (2007). Capacità trasversali: elemento cruciale nel profilo di competenze per la ricerca.Università degli Studi di Trieste.
Focus on achievement	The researcher's capability of identifying and successfully pursue defined objectives.	Busana, Clara, Banterle, Alberto, (2007). Capacità trasversali: elemento cruciale nel profilo di competenze per la ricerca.Università degli Studi di Trieste.
Handling Budgets	Academics need to match their research goals with the money they have been awarded, keeping good records of their income and spending.	Armstrong, Catherine. (2008), Five Skills you need to become a Researcher. Available online at: https://www.jobs.ac.uk/careers-advice/working-in-higher-education/1203/5-skills-you-need-to-become-a-researcher
Ability to raise funds	Ability to raise competitive funding from national and international funding agencies	Foundation for Science and Technology (2014). Evaluation guide for the 20154 FCT investigator grants. Retrieved from https://www.fct.pt/apoios/contratacaodoutorados/investigador-fct/2014/docs/EvaluationGuide_IF2014.pdf
Scientific independence	Absent	Foundation for Science and Technology (2017). Evaluation guide. Stimulus of scientific employment, individual support, 2017 call. Retrieved from file:///C:/Users/bento/Desktop/ENREAC_Até%2021%20jan%202019/Guiao_de_Avaliacao.pdf
Independence	Being able to work without close supervision, managing your own time and projects	Vitae Researcher Development Framework (Vitae is the global leader in supporting the professional development of researchers, experienced in working with institutions as they strive for research excellence, innovation and impact. We are a non-profit programme, part of

Il sostegno della Commissione europea alla produzione di questa pubblicazione non costituisce un'approvazione del contenuto, che riflette esclusivamente il punto di vista degli autori, e la Commissione non può essere ritenuta responsabile per l'uso che può essere fatto delle informazioni ivi contenute.

		The Careers Research and Advisory Centre (CRAC) Ltd with nearly 50 years' experience in enhancing the skills and careers of researchers.) https://www.vitae.ac.uk/researchers-professional-development/about-the-vitae-researcher-development-framework
Evaluation & Reflection	Determine and critique the degree of credibility of selected sources, information and of data generated. Metacognitively reflect on processes used.	Willison, John, and Kerry O'Regan. 2006/2013. "Research Skill Development Framework." http://www.adelaide.edu.au/rsd/ Accessed September 15, 2015.
Scientific productivity	Publications in top speciality peer-reviewed journals and/or in major multidisciplinary peer-review journals.	Foundation for Science and Technology (2014). Evaluation guide for the 20154 FCT investigator grants. Retrieved from https://www.fct.pt/apoios/contratacaodoutorados/investigador-fct/2014/docs/EvaluationGuide_IF2014.pdf
Contributing as a professional	Presenting work to your peers, managing discussions and defending your position, having the confidence to put forwards ideas to senior staff	Vitae Researcher Development Framework (Vitae is the global leader in supporting the professional development of researchers, experienced in working with institutions as they strive for research excellence, innovation and impact. We are a non-profit programme, part of The Careers Research and Advisory Centre (CRAC) Ltd with nearly 50 years' experience in enhancing the skills and careers of researchers.) https://www.vitae.ac.uk/researchers-professional-development/about-the-vitae-researcher-development-framework
Initiative	Having the confidence to make decisions and act on them, not waiting for approval to do basic tasks, but reporting back responsibly at appropriate times	
Knowing current work in field	A researcher can: outline “hot” topics in a specific field, identify which of them will remain “hot” in the next years, summarise how this field has evolved over the past years, name conferences and the latest issues of journals in the domain.	

Il sostegno della Commissione europea alla produzione di questa pubblicazione non costituisce un'approvazione del contenuto, che riflette esclusivamente il punto di vista degli autori, e la Commissione non può essere ritenuta responsabile per l'uso che può essere fatto delle informazioni ivi contenute.

Identification of Education and Training Programs

The aim of this part is to characterize education and training programs on research skills development available in the project countries. In the course of the desk research, 15 different programs were identified, most of which are academic ones.

Program 1

Program/Course title:	SUMMER SCHOOL TRANSKILLS Strategic competences for young researchers
Program/Course objectives:	This summer school focuses on a variety of multilevel research competences and skills such as: effective communication, personal branding, creative thinking etc., applied both to the academic field and to the non-academic labour market.
Specific program and modules description:	▪ multilevel research skills ▪ transdisciplinary entrepreneurship and career management ▪ Interdisciplinary and trans-sectorial research: good practices and tips ▪ applied research: working for a customer. ▪ applied research: applying research competences to social issues. ▪ building bridges: how to create a relationship between academia and enterprises ▪ new transversal skills and new career profiles ▪ public speaking and scientific research ▪ transdisciplinary research: the required skills ▪ personal branding ▪ Skill Talks: shared examples on how research related skills had a positive impact on different career paths, such as academic ones, entrepreneurial ones and others.
Theoretical background of the course program:	Mostly academic. Professionals' experiences are also involved
Methods of training/learning:	Taught classes, lectures, panel discussions.
Provider:	Name of the institution: Università Cattolica del Sacro Cuore Milano Address: LARGO A. GEMELLI, 1 - 20123 MILANO www: https://progetti.unicatt.it/progetti-ateneo-durante-il-percorso-di-dottorato-summer-school-transkills-competenze-strategiche-per-i-giovani
Course duration:	4 days full time
Target audience:	Postgraduate students and researchers
Researchers skills to be acquired	Multilevel research skills Effective communication Transdisciplinary entrepreneurship and career management skills Interdisciplinary and trans-sectorial research practices Public speaking Personal branding
ETCS (if defined)	none

Program 2

Program/Course title:	Complementary Skills course
Program/Course objectives:	The course is addressed to PhD students and focuses on complementary skills for postgraduate students and researchers, as expected in the framework of European higher education. The acquisition of research competences and other strategic skills aims at enhancing PhD student's employability in the contemporary "knowledge- based economy",

Il sostegno della Commissione europea alla produzione di questa pubblicazione non costituisce un'approvazione del contenuto, che riflette esclusivamente il punto di vista degli autori, e la Commissione non può essere ritenuta responsabile per l'uso che può essere fatto delle informazioni ivi contenute.

	both in the academic and non-academic field. Such skills should facilitate the development and the application of scientific knowledge in other professional activities.
Specific program and modules description:	For more detailed information refer to: ufficiodottorato@unisi.it
Theoretical background of the course program:	Academic background. The legal framework refers to the Italian law, specifically article 4), letter f) of the D.M. 45/2013.
Methods of training/learning:	Lectures and workshops.
Provider:	Name of the institution: University of Siena Address: via Banchi di Sotto 55, 53100 Siena Italy. www: https://www.unisi.it/ricerca/dottorati-di-ricerca/corsi-trasversali
Course duration:	The course is divided in single modules. Each module requires a day of lectures and activities. The updated calendar is available at unisi.it.
Target audience:	PhD students
Researchers skills to be acquired	Complementary skills for academic research and intellectual jobs.
ETCS (if defined)	Information not available

Program 3

Program/Course title:	TRANSFERABLE SKILLS
Program/Course objectives:	The course provides educational experiences which challenge students to gain valuable research and transferable skills.
Specific program and modules description:	The modules focus on the required skills: ▪ project management ▪ bibliographical research ▪ academic presentations and writing ▪ working in an international team.
Theoretical background of the course program:	The course program is based mainly on academic theoretical background of the defined field.
Methods of training/learning:	Lectures taught in English
Provider:	Name of the institution: Alma Mater Studiorum Università di Bologna Address: Via Zamboni, 33 - 40126 Bologna https://www.unibo.it/it/didattica/insegnamenti/insegnamento/2018/403093
Course duration:	The lectures, workshops and individual work will require up to 80 h.
Target audience:	Students and researchers
Researchers skills to be acquired	Research skills like: Project management Bibliographical research Academic presentations and writing Working in an international team.
ETCS (if defined)	3 ETCS

Program 4

Program/Course	M.Sc. Data Science

Il sostegno della Commissione europea alla produzione di questa pubblicazione non costituisce un'approvazione del contenuto, che riflette esclusivamente il punto di vista degli autori, e la Commissione non può essere ritenuta responsabile per l'uso che può essere fatto delle informazioni ivi contenute.

title:	
Program/Course objectives:	The master's program in Data Science is offering specialized training on topical problems of computer science in accordance with international, European and national criteria and requirements. Our goal is to prepare more professionals in the field of data science. The Training Highlights in this master programs are: Programming For Data Science, Semantic Data, Database Systems, Research And Development Internship, Information Management Masterclass, Distributed and Cloud Computing, Elective Courses, Master Thesis Developmen and Defence, Data Mining Information Management, Cryptography, High Performance Scientific Computing, Data Security, Neuroscience, Natural Language Processing, etc.
Specific program and modules description:	Programming For Data Science Semantic Data Research And Development Internship Database Systems Information Management Distributed And Cloud Computing Data Mining Data Security
Theoretical background of the course program:	Master program: Completed bachelor to master degree program in Computer Science is required
Methods of training/learning:	Face to face; lectures and practical classes in companies
Provider:	Name of the institution: Varna Free University Address: Chayka Resort, Varna, Bulgaria, 9007 www: http://datascience.vfu.bg/
Course duration:	One year
Target audience:	students
Researchers skills to be acquired	Analytical Skills, Technical and Computer Skills, Big Data/Cloud Computing
ETCS (if defined)	60 credits

Program 5

Program/Course title:	Master Program in Entrepreneurship
Program/Course objectives:	The Master in Entrepreneurship (MiE) Program is a two-semester graduate-level academic program for active professionals and entrepreneurs from Bulgaria and the CEE region. In mid- to long-term the Program will seek to expand and include Turkey and the Middle East. The Program is designed to develop entrepreneurial mindset and shape skills needed for effective initiation, and execution of entrepreneurial projects across different contexts: business, social services, art, sciences, politics, etc.
Specific program and modules description:	The Entrepreneurship Mindset, Team & Roles 5 Skills of successful entrepreneurs Law for the Entrepreneur Finance for New Ventures and Young Companies Managing the Entrepreneurial Process Ideation Techniques MANAGERIAL ACCOUNTING Finance for New Ventures and Young Companies FINANCING GROWING VENTURES MANAGING THE INNOVATION PROCESS
Theoretical	Master program: Completed bachelor to master degree program

Il sostegno della Commissione europea alla produzione di questa pubblicazione non costituisce un'approvazione del contenuto, che riflette esclusivamente il punto di vista degli autori, e la Commissione non può essere ritenuta responsabile per l'uso che può essere fatto delle informazioni ivi contenute.

background of the course program:	
Methods of training/learning:	Face to face; lectures and practical classes in companies
Provider:	Name of the institution: Varna Free University Address: Chayka Resort, Varna, Bulgaria, 9007 www: http://entr.vfu.bg/
Course duration:	One year
Target audience:	students
Researchers skills to be acquired	The three pillar elements are: ▪ Classical courseware – delivering fundamental knowledge in areas that are relevant for successful entrepreneurship such as law for entrepreneurs and managers; accounting; fundamentals of business strategy; marketing principles; leadership and finance. ▪ Facilitated experiential learning – shaping targeted soft skills identified as essential for successful team building and customer satisfaction and guiding students through an interactive, disciplined process of planning, preparing and executing an entrepreneurial project. ▪ Inspirational real-life storytelling – presenting first-hand real-life stories of entrepreneurs, many of whom shared the same national and cultural background as the MiE students, revealing the ups and downs in their personal experience of initiating, leading, failing and succeeding with new ventures and social initiatives in similar national.
ETCS (if defined)	60 credits
Other relevant details:	The Program will be grounded on the philosophy that entrepreneurship can be taught and disciplined on the basis of combining the delivery of knowledge from specific areas relevant to any entrepreneur, training of specific soft skills that enable the navigation of expected steps and challenges in the entrepreneurial process, and hands-on learning experiences that are designed around real-world entrepreneurial ventures.

Program 6

Program/Course title:	Open access for open science
Program/Course objectives:	During the seminar the participants together: will contribute to the understanding of this global process of change in the field of scientific communication; discuss policies to promote this model and encourage scientists to ensure free access to their achievements in our country; building sustainable links between individual universities, colleges, research institutes, funding agencies and academic libraries; finding solutions for raising the visibility and impact of Bulgarian scientific publications.
Specific program and modules description:	Open Science and Social Science Networks - The presentation briefly discusses the concept of Open Science, presents two of ResearchGate and Academia.edu's largest social research networks, as well as some of their benefits. Management of scientific data and open science - Consideration will be given to the issues of sustainability and transformation of Open Science
Methods of training/learning:	Face to face / seminar
Provider:	Name of the institution: Bulgarian Information Consortium Address: 21, Montevideo Street, 1618 Sofia www: https://www.bic.bg/newsreader/seminar-otvoren-dostp-za-otvorena-nauka.html
Course duration:	5 days

Il sostegno della Commissione europea alla produzione di questa pubblicazione non costituisce un'approvazione del contenuto, che riflette esclusivamente il punto di vista degli autori, e la Commissione non può essere ritenuta responsabile per l'uso che può essere fatto delle informazioni ivi contenute.

Target audience:	academic staff
Researchers skills to be acquired	
ETCS (if defined)	

Program 7

Program/Course title:	Research Methods in Computer Science
Program/Course objectives:	Upon successful completion of this course students should be able to: ▪ Develop written, oral and technical research skills. ▪ Select and justify a research topic. ▪ Review the literature ▪ Apply appropriate qualitative/quantitative/mixed research method to different problems. ▪ Explain the need to position a research project in a wider academic and business context. ▪ Design, execute, interpret and report results from empirical research projects ▪ Distinguish between qualitative and quantitative research approaches ▪ Discuss the Legal, Social, Ethical and Professional issues applicable to the computer industry.
Specific program and modules description:	The nature of research: Definitions and types of research; research process; topic selection and scope; feasibility and value. The literature search: Sources of information; differentiating between types of sources; primary, secondary and tertiary sources; using the library and digital databases to conduct efficient literature reviews; searching the Internet; role of the supervisor. Qualitative and Quantitative research methods: Elaborate on the different approaches of qualitative and quantitative research approaches. Project management: Methods, techniques and tools for research design, and data collection. Analysis and synthesis: Statistical techniques for data analysis; dimensionality reduction, use of appropriate software. Reliability and validity of research projects: Explain what is reliability and validity, describe how to measure reliability and validity Ethical, Legal, Social, Professional Considerations: Understand the professional, legal and ethical framework of research. Presentation of research findings: Project structure; conventions on citation and quotations; style of writing a report.
Theoretical background of the course program:	Doctorate Course, no specific pre-requisite course

Il sostegno della Commissione europea alla produzione di questa pubblicazione non costituisce un'approvazione del contenuto, che riflette esclusivamente il punto di vista degli autori, e la Commissione non può essere ritenuta responsabile per l'uso che può essere fatto delle informazioni ivi contenute.

Methods of training/learning:	Class Instruction
Provider:	Name of the institution: European University Cyprus http://www.euc.ac.cy
Course duration:	1 academic semester (42 lecture hours)
Target audience:	students
Researchers skills to be acquired	Research Skills and Techniques: Recognising research problems, Critical thinking, Knowing current work in field, Research methods, Critical reviewing, Documenting and reporting Research Environment: Understanding the research context, Complying with ethical requirements, Following good research practice, Justifying research methods Communication Skills: Academic writing, Presenting to non-academics, Academic presentations, Promotion of public understanding, Teaching, mentoring, demonstrating
ETCS (if defined)	11

Program 8

Program/Course title:	ENG 102: Research Skills in the Humanities
Program/Course objectives:	The course aims to offer students of the Department more systematic guidance in writing academic papers. It aims to function as a preparatory course in order to enhance the research skills needed for papers and presentations in Literature, Linguistics and Translation. The course comprises four main areas (a) acquainting students with the University library and electronic catalogues, (b) working with the Internet, (c) introducing MS-Word and Power Point, and (d) dealing with problems of correct citation of bibliography
Specific program and modules description:	Introduction: Thinking, Researching and Writing as parts of the same process; Primary and Secondary Research, Keeping a Journal, Annotating Sources, asking Questions. Working with the Library and Online Databases: Finding and Managing Print and online sources; searching through library catalogues and online databases for books. Searching through library catalogues and online Databases for Journal articles. Working with the Internet, Evaluating Sources, Copyright and Intellectual Property, Plagiarism: Searching the internet and evaluating sources; Using the Credibility, Accuracy, Reasonableness, Support checklist (CARS). Plagiarism, Copyright and Intellectual property. Working with sources and avoiding plagiarism. Citation Methods: Documenting your sources: MLA Documentation style. Documenting your sources: APA documentation style.
Theoretical background of the course program:	None specified
Methods of training/learning:	Lectures / projects / presentations
Provider:	Name of the institution: University of Cyprus http://www.ucy.ac.cy/en/

Il sostegno della Commissione europea alla produzione di questa pubblicazione non costituisce un'approvazione del contenuto, che riflette esclusivamente il punto di vista degli autori, e la Commissione non può essere ritenuta responsabile per l'uso che può essere fatto delle informazioni ivi contenute.

Course duration:	1 academic semester (42 lecture hours)
Target audience:	students
Researchers skills to be acquired	Research Skills and Techniques: Recognising research problems, Critical thinking Research Environment: Understanding the research context Research Management: Organising your work, Information management, Using information sources, Using IT
ETCS (if defined)	5
Other relevant details:	

Program 9

Program/Course title:	CO1806 - Study & Research Skills
Program/Course objectives:	The main objective of this module is to improve students' skills concerning study and research, both at an independent and group capacity. By the end of the course, students are expected to: ▪ Use information sources and available technology to research a computing- related subject ▪ Prepare and present a written and oral presentation ▪ Produce summaries and make notes ▪ Apply time management skills ▪ Relate to and interact effectively with individuals and groups
Specific program and modules description:	In this module students learn basic skills in reading, studying and researching the bibliography: ▪ Finding, evaluating and presenting information (including report/essay format, refereed articles, opinion pieces, written and verbal presentation). ▪ Note-taking ▪ Writing: planning, structure, style, punctuation ▪ Summarising ▪ Referencing, plagiarism and academic crimes ▪ Revision and examinations ▪ Time management ▪ Teamwork, planning, monitoring and control ▪ Meetings, minutes and actions ▪ Research and discussion on contemporary issues affecting users of technology and technological trends, including ethical/legal issues.
Theoretical background of the course program:	None required
Methods of training/learning:	Class Instructions
Provider:	Name of the institution: UCLAN Cyprus https://www.uclancyprus.ac.cy/
Course duration:	1 academic semester (42 lecture hours)
Target audience:	students
Researchers skills to be acquired	Research Skills and Techniques: Documenting and reporting Research Management: Organising your work, Information management, Using information sources, Using IT Networking and Teamworking Skills: Building relationships and networks, Working in a team, Giving and receiving feedback
ETCS (if defined)	Not available

Il sostegno della Commissione europea alla produzione di questa pubblicazione non costituisce un'approvazione del contenuto, che riflette esclusivamente il punto di vista degli autori, e la Commissione non può essere ritenuta responsabile per l'uso che può essere fatto delle informazioni ivi contenute.

Program 10

Program/Course title:	Understanding Research Methods
Program/Course objectives:	This MOOC is about demystifying research and research methods. It will outline the fundamentals of doing research, aimed primarily, but not exclusively, at the postgraduate level. It places the student experience at the centre of our endeavours by engaging learners in a range of robust and challenging discussions and exercises befitting SOAS, University of London's status as a research-intensive university and its rich research heritage. The course will appeal to those of you who require an understanding of research approaches and skills, and importantly an ability to deploy them in your studies or in your professional lives. In particular, this course will aid those of you who have to conduct research as part of your postgraduate studies but do not perhaps have access to research methods courses, or for those of you who feel you would like additional support for self-improvement. No prior knowledge or experience in research is required to take this course and as such, the course is for everyone.
Specific program and modules description:	1- What Is Research and What Makes a Good Research Question? 2- What Is a Literature Review and Why Do We Need to Do One? 3- Why Are Planning and Management Skills Important for Research? 4- How Do You Know You Have Been a Good Researcher at the End of a Project?
Theoretical background of the course program:	This MOOC draws on a wealth of existing course material developed to support research training across SOAS, University of London and particularly drawing from the Centre for International Studies and Diplomacy (CISD). In 2015, the course was nominated for the prestigious Guardian University Award for its innovative approach to online learning.
Methods of training/learning:	Online (MOOC)
Provider:	Name of the institution: SOAS University of London- COURSERA www: https://www.coursera.org/learn/research-methods?ranMID=40328&ranEAID=SAyYsTvLiGQ&ranSiteID=SAyYsTvLiGQ-nL0M82_yANCtsq5EhViTfA&siteID=SAyYsTvLiGQ-nL0M82_yANCtsq5EhViTfA&utm_content=10&utm_medium=partners&utm_source=linkshare&utm_campaign=SAyYsTvLiGQ
Course duration:	4 weeks - Flexible
Target audience:	students
Researchers skills to be acquired	▪ Planning and Management Skills ▪ Introduction to research
ETCS (if defined)	-

Program 11

Program/Course title:	Learning Online: Searching and Researching
Program/Course objectives:	▪ Searching effectively online using a variety of search engines and tools ▪ Combining information from multiple sources, blending online and offline materials to aid research ▪ Sharing research to collaboratively develop a broader understanding of topics ▪ Assessing and evaluating information: considering the authority, timeliness and relevance of sources to ensure validity ▪ Critical thinking: utilising information and providing context to research to aid the drawing of conclusions

Il sostegno della Commissione europea alla produzione di questa pubblicazione non costituisce un'approvazione del contenuto, che riflette esclusivamente il punto di vista degli autori, e la Commissione non può essere ritenuta responsabile per l'uso che può essere fatto delle informazioni ivi contenute.

Specific program and modules description:	▪ Searching and Researching ▪ Tips for effective online searching ▪ Blending your sources ▪ Learning to Research Effectively ▪ Assessing and evaluating information ▪ Critical thinking ▪ Information chain reactions
Theoretical background of the course program:	In this course, you'll explore the rich and diverse range of information available to you online, how to use search tools effectively, and the ways in which you can begin to assess information that you might want to use in your studies. Using a wide range of learning activities, you will be challenged to dig deeper and think critically about the information that you find online. This course is just one of a series about 'learning online', which introduces you to the essential skills and tools you need to study online.
Methods of training/learning:	Online (MOOC)
Provider:	Name of the institution: University of Leeds- FutureLearn www: https://www.class-central.com/course/futurelearn-learning-online-searching-and-researching-5019
Course duration:	2 weeks
Target audience:	students
Researchers skills to be acquired	▪ Assessing and evaluating information ▪ Critical thinking ▪ Combining information
ETCS (if defined)	

Program 12

Program/Course title:	**Improve Your Research Skills**
Program/Course objectives:	▪ make optimal use of the library's services, ▪ perform a 'state-of-the-art' research using source materials while writing a paper or essay and ▪ use all of the modern tools that facilitate the process of making a professional list of references.
Specific program and modules description:	▪ Module 1 | Planning ▪ Module 2 | Source materials ▪ Module 3 | Searching ▪ Module 4 | Writing ▪ Module 5 | Plagiarism
Theoretical background of the course program:	This course teaches the basic skills needed for conducting sound source research.
Methods of training/learning:	Online (MOOC)
Provider:	Name of the institution: Vrije Universiteit Brussel via Canvas Network www: https://www.class-central.com/course/canvas-network-improve-your-research-skills-9033
Course duration:	5 hours a week- Flexible
Target audience:	▪ students ▪ employees
Researchers skills to be acquired	Research design
ETCS (if defined)	

Il sostegno della Commissione europea alla produzione di questa pubblicazione non costituisce un'approvazione del contenuto, che riflette esclusivamente il punto di vista degli autori, e la Commissione non può essere ritenuta responsabile per l'uso che può essere fatto delle informazioni ivi contenute.

Program 13

Program/Course title:	Workshop on Open Science Knowledge for all: from concepts to action
Program/Course objectives:	Promoting Open Access to scientific publications and to scientific data agenda with a focus on the share/re-use concept, new methods and a more inclusive way of production/construction, validation and dissemination of knowledge.
Specific program and modules description:	OPEN SCIENCE TO BOOST SCIENTIFIC EXCELLENCE IN EUROPE OPEN SCIENCE AS A PATH TO DEMOCRATISE ACCESS TO KNOWLEDGE SOCIAL APPROPRIATION OF SCIENCE
Theoretical background of the course program:	The program was based on the discussion and results from the Brussels's Preparatory Meeting for the Open Science Conference under the Dutch Presidency of the Council of the EU from 4 to 5 April 2016 in Amsterdam.
Methods of training/learning:	Learning from previously selected case studies related to each of the action lines outlined above. The framework proposed fits conceptual and experimental projects that interconnect open science with social and cultural demands and incentives, putting in perspective the traditional scientific workflow. The approximation between science and culture should be explicitly motivated.
Provider:	Name of the institution: Ministry of Science, Technology and Higher Education Address: Lisbon www: http://docs.wixstatic.com/ugd/a8bd7c_a545233f6edc4f86bfc0184238037a5f.pdf
Course duration:	1 day
Target audience:	academic staff
Researchers skills to be acquired	Open science
ETCS (if defined)	Not defined

Program 14

Program/Course title:	Program for the Development of Research Competences
Program/Course objectives:	Encourage and enable the development of technical student research skills by training and integrating them into research internships with ISPA (Instituto Universitário Ciências Pedagógicas, Sociais e da Vida) research teams.
Specific program and modules description:	Module 1 – Introduction to the program of development of research competences / research methods Module 2 – Content analysis Module 3 - Laboratory Module 4 - Surveys: Questionnaire research + Introduction to databases Modules 5-6 - Options
Theoretical background of the course program:	Not presented.
Methods of training/learning:	Module 1: Introduction to the general objectives of the program and the research methodologies to be developed during the program. We intend that the participants acquire the necessary knowledge to conduct experimental sessions in a correct way and become familiar with the research procedures in Psychology. Module 2: The module focuses on the technique of content analysis that supports documentary research and interview analysis. Along with the acquisition of the theoretical and technical knowledge necessary to carry out a content analysis, training involves learning the NVivo program. Module 3: This module focuses on the E-Prime software platform, briefly exposing its composition and interfaces as well as the advantages associated with using this software. Through a theoretical-practical methodology, the participants will have the opportunity to understand the internal dynamics of an experience realized in

Il sostegno della Commissione europea alla produzione di questa pubblicazione non costituisce un'approvazione del contenuto, che riflette esclusivamente il punto di vista degli autori, e la Commissione non può essere ritenuta responsabile per l'uso che può essere fatto delle informazioni ivi contenute.

	this type of platform - from its conception and planning, through the operationalization in the program, to the final stage of "running" the experience. Module 4: The module will consist of a theoretical-practical component, with the main objective being the creation and application of an online questionnaire, as well as the construction of databases and manipulation of variables. Modules 5-6 – Options: Depending on the research projects, specific training modules may be created each academic year.
Provider:	Name of the institution: ISPA (Instituto Universitário Ciências Pedagógicas, Sociais e da Vida) Address: Rua Jardim do Tabaco, nº34 1149-041 Lisboa, Portugal www: http://en.ispa.pt/
Course duration:	1 year
Target audience:	students
Researchers skills to be acquired	Content analysis Survey analysis Conceptualization and planning of a research Use of digital resources for research
ETCS (if defined)	Not defined
Other relevant details:	After the program, the student can do a research Internship. Research internship consists of integrating the student into a research team and carrying out an associated project, and will be assigned a scientific supervisor.

Program 15

Program/Course title:	Advanced course “Qualitative analysis with webQDA”
Program/Course objectives:	▪ Develop knowledge, skills and research attitudes that facilitate the appreciation and construction of scientific works. ▪ Develop knowledge of conceptual and methodological tools that allow identifying, observing and understanding problems with which the researcher is confronted in applied contexts, as well as presenting and implementing appropriate resolution proposals, including the adoption and / or construction of research instruments. – ▪ Develop knowledge on methodology of investigation, obtaining, treatment and analysis of data, as well as on the critical writing of the results of these analyzes and their implications in the scientific development of the study area.
Specific program and modules description:	Software webQDA
Theoretical background of the course program:	Because learning of the qualitative analysis with or without the support of a technological tool requires practical experiences that have beginning, middle and end, this course propose integrated and complete analysis of the webQDA tool. This practical character of the course intends to help participants answer the following questions: ▪ How to harmonize the problems of research and data analysis? ▪ What are the articulations between the various methodological phases, such as data analysis and writing results? ▪ With what support tool can I analyze the data I have? ▪ How to organize the analysis to arrive at useful results? ▪ How to interpret research results? Your limitations and potentialities?
Methods of training/learning:	This course starts from an introduction (revision) to the qualitative methods applied to the Social and Human Sciences, whose understanding and use will enable researchers to analyze and understand research results, as well as generate their own data analysis in fields that result from their interests. Starting from the

Il sostegno della Commissione europea alla produzione di questa pubblicazione non costituisce un'approvazione del contenuto, che riflette esclusivamente il punto di vista degli autori, e la Commissione non può essere ritenuta responsabile per l'uso che può essere fatto delle informazioni ivi contenute.

	reflection on different research approaches, it is important to discuss these approaches and to reflect, as deeply as possible, on their implications for the research that is intended to be carried out. On the other hand, it will be provided the opportunity to deepen the full use of webQDA to analyze the real data in a complete way. It is hoped that the proposal of this course will contribute to the technical, scientific and human training of the participants. Participants are also expected to be able to produce a scientific paper, as deep as possible up to 6 weeks, to use all the theoretical knowledge that has been constructed in the meantime, as well as the analytical tools and tools necessary to answer research problems.
Provider:	Name of the institution: University of Aveiro Address: Campus Universitário de Santiago 3810-193 Aveiro, Portugal https://www.unave.pt/?formacao=curso-avancado-analise-qualitativa-com-apoio-do-software-webqda
Course duration:	50 hours (2 h with presetcial attendance + 25h of autonomous work)
Target audience:	▪ students ▪ academic staff
Researchers skills to be acquired	Construct research instruments Research methodology Data analysis
ETCS (if defined)	Not defined

European Level Open Science Resources

Resource Title	Organisation / Authors	Resource Type	Brief Description
"Providing researchers with the skills and competencies they need to practise Open Science"	European Commission - Open Science Skills Working Group	Report / Guidelines (including **best practices** and **guidelines on teaching / training** Open Science)	Comprehensive survey on current status of Open Science, including description of best practices and guidelines on raising awareness, fostering, supporting, **and teaching Open Science** https://ec.europa.eu/research/openscience/pdf/os_skills_wgreport_final.pdf
"FOSTER: Fostering the practical implementation of Open Science in Horizon 2020 and beyond"	EU-funded research project	Web Portal / Guidelines (**full set of training resources and materials on Open Science**)	e-learning platform which **contains a full set of training resources and materials about Open Science** https://www.fosteropenscience.eu/
"The Open Science Training Handbook"	EU-funded research project (same as the previous one: FOSTER)	**Training Handbook**	**Full training resource for developing and implementing a course on Open Science concepts** https://open-science-training-handbook.gitbook.io/book/
"OpenAIRE (Open Access Infrastructure for Research in Europe)"	EU-funded research project (which is developing into an organisation)	Network + Digital Infrastructure (**includes training material + primers on Open Science**)	Network and provider of Open Access material. **Has published training guides + related material. Uses National Open Access Desks and provides corresponding**

Il sostegno della Commissione europea alla produzione di questa pubblicazione non costituisce un'approvazione del contenuto, che riflette esclusivamente il punto di vista degli autori, e la Commissione non può essere ritenuta responsabile per l'uso che può essere fatto delle informazioni ivi contenute.

			contacts. https://www.openaire.eu/
"PASTEUR4OA: Open Access policy guidelines and checklists"	EU-funded research project	Guidelines and Checklists	Open Access Policy Guidelines for Institutions and Funders www.pasteur4oa.eu/news/221
SPARC ; Scholarly Publishing and Academic Resources Coalition	International group of authors, publishers, libraries, students, funders, policymakers and the public committed to make open the default for research and education.	Research and reports	SPARC is a global coalition committed to making Open the default for research and education through the adoption of policies and practices that advance Open Access, Open Data, and Open Education. https://sparcopen.org/
"E-skills and Open Data"	Wendy Carrara European Data portal	Report	The report focuses on **which skills are needed to work with Open Data** https://www.europeandataportal.eu/sites/default/files/edp-analytical-report-n2-e-skills.pdf
"Open data essentials" e-course	Open Data Institute	E-course	This course provides **information on what open data** is. http://accelerate.theodi.org/
"Open Science MOOC"	Network of Researchers / Volunteers	MOOC (**with the specific aim to train researchers on Open Science Concepts**)	A Massive Open Online Course **designed to equip researchers with Open Science skills**. Organised in 10 individual modules. https://opensciencemooc.eu/
"Open Science Training Initiative"	Researchers / Volunteers	Training Course (**on Open Science Concepts**)	A training course on Open Science concepts designed and conducted experimentally at the University of Oxford. **Course structure and electronic supplementary material are available**. http://www.opensciencetraining.com/
"The Innovation Policy Platform"	OECD (Organisation for Economic Co-operation and Development)	Web Portal (**includes Open Science policy notes for many individual European countries**)	Resources on the development of innovation policies, including Open Science policies https://www.innovationpolicyplatform.org/
"Making Open Science a Reality"	OECD (Organisation for Economic Co-operation and Development)	Policy Paper	Policy Paper surveying the area of Open Science and making key policy recommendations (**including the need for Open Science training**) http://dx.doi.org/10.1787/5jrs2f9

Il sostegno della Commissione europea alla produzione di questa pubblicazione non costituisce un'approvazione del contenuto, che riflette esclusivamente il punto di vista degli autori, e la Commissione non può essere ritenuta responsabile per l'uso che può essere fatto delle informazioni ivi contenute.

			63zs1-en
Open access - open science	Coalition of Universities	Online course	Online course on open science /basic level/ consists of warm up activity and 9 modules on Open Access. The course "Open access - open science" was developed by activists and information technology experts from all over Poland dealing with the aspect of openness in science and educational resources. https://otwartanauka.cel.agh.edu.pl/course/view0b30.html?id=2
OPEN SCIENCE MOOC by Eliademy	International e-learning platform based in Finland	E-learning platform	This MOOC is designed to help equip students and researchers with the skills they need to excel in a modern research environment. It brings together the efforts and resources of hundreds of researchers and practitioners who have all dedicated their time and experience to create a community platform to help propel research forward. https://eliademy.com/openscienceemooc

References

1. European Commission. (July, 2017). Providing researchers with the skills and competencies they need to practise Open Science – Open Science Skills Working Group Report. *Research and Innovation*. Retrieved from: https://ec.europa.eu/research/openscience/pdf/os_skills_wgreport_final.pdf
2. Mueller-Langer, F., & Andreoli-Versbach, P. (2018). Open access to research data: Strategic delay and the ambiguous welfare effects of mandatory data disclosure. *Information Economics and Policy*, *42*, 20-34. http://dx.doi.org/10.2139/ssrn.2458362
3. Anders, O. J. (2018). Open access in the Nordic countries – how far have we come? Retrieved from NordForsk: https://www.nordforsk.org/no/publikasjoner/publications_container/rapport-the-state-of-open-science-in-the-nordic-countries-enabling-data-science-in-the-nordic-region/download

Il sostegno della Commissione europea alla produzione di questa pubblicazione non costituisce un'approvazione del contenuto, che riflette esclusivamente il punto di vista degli autori, e la Commissione non può essere ritenuta responsabile per l'uso che può essere fatto delle informazioni ivi contenute.

4. Vicente-Saez, R., & Martinez-Fuentes, C. (2018). Open Science now: A systematic literature review for an integrated definition. *Journal of Business Research*, *88*, 428-436. https://doi.org/10.1016/j.jbusres.2017.12.043
5. McKiernan, E. C., Bourne, P. E., Brown, C. T., Buck, S., Kenall, A., Lin, J., ... & Spies, J. R. (2016). Point of view: How open science helps researchers succeed. *Elife*, *5*. https://doi.org/10.7554/eLife.16800
6. Open Science. Concept. Retrieved from http://www.ciencia-aberta.pt/sobre-ciencia-aberta
7. Nosek, B. A., Alter, G., Banks, G. C., Borsboom, D., Bowman, S. D., Breckler, S. J., ... & Contestabile, M. (2015). Promoting an open research culture. *Science*, *348*(6242), 1422-1425. http://dx.doi.org/10.1126/science.aab2374

Il sostegno della Commissione europea alla produzione di questa pubblicazione non costituisce un'approvazione del contenuto, che riflette esclusivamente il punto di vista degli autori, e la Commissione non può essere ritenuta responsabile per l'uso che può essere fatto delle informazioni ivi contenute.

ENREAC-HEI

ENhance REseArChers and HEI staff skills

Funded by the Erasmus+ Programme of the European Union

Il sostegno della Commissione europea alla produzione di questa pubblicazione non costituisce un'approvazione del contenuto, che riflette esclusivamente il punto di vista degli autori, e la Commissione non può essere ritenuta responsabile per l'uso che può essere fatto delle informazioni ivi contenute.