D3.1.: Training programmes (contents and activities)

**Dissemination level:** Public  
**Document type:** Report  
**Version:** 1.0  
**Date:** 27.01.2022

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement #101016888. This result only reflects the author's view and the EU is not responsible for any use that may be made of the information it contains.
Abstract
This document presents the ECIU SMART-ER Academy training programmes for doctoral students and researchers. The programmes, entitled Online PhD Training Programme and Open Science & Leadership Blended-Training Programme, aim to develop SMART-ER researchers’ professional skills in a range of areas, such as citizen science, open science, challenge-based learning, interdisciplinary research, research design and grants, transversal skills and strengthen the SMART-ER human capital. Review of literature, mapping the courses organised by partners and survey researchers about their professional development are the main methodological approaches used to identify and describe the courses that integrate the SMART-ER Academy. The results show the main type of training the partners organise (i.e. topic and format), what is lacking and what researchers would like to have more. Nine courses compose the Online PhD Training Programme, with a total course load of 16
ECTS, whilst eight courses compose the Open Science & Leadership Blended-Training Programme, with a total course load of 13 ECTS. For the implementation of the programmes, we propose an effective use of resources, i.e. invite the partners who already run similar training activities, create joint courses for PhD and researchers, and prioritize the implementation of courses where there is a lack of offers.
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<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAU</td>
<td>Aalborg University</td>
</tr>
<tr>
<td>CBL</td>
<td>Challenge-based learning</td>
</tr>
<tr>
<td>CBI</td>
<td>Challenge-based innovation</td>
</tr>
<tr>
<td>CBR</td>
<td>Challenge-based research</td>
</tr>
<tr>
<td>D</td>
<td>Deliverable</td>
</tr>
<tr>
<td>DCU</td>
<td>Dublin City University</td>
</tr>
<tr>
<td>DPO</td>
<td>Data protection office</td>
</tr>
<tr>
<td>EC</td>
<td>European Commission</td>
</tr>
<tr>
<td>ECIU</td>
<td>European Consortium of Innovative Universities</td>
</tr>
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<td>ECTS</td>
<td>European Credit Transfer System</td>
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<td>General Data Protection Regulation</td>
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<td>INSA</td>
<td>Institut National des Sciences Appliquées</td>
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<td>KPI</td>
<td>Key performance indicators</td>
</tr>
<tr>
<td>KTU</td>
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</tr>
<tr>
<td>LiU</td>
<td>Linköping University</td>
</tr>
<tr>
<td>LMS</td>
<td>Learning Management Systems</td>
</tr>
<tr>
<td>M</td>
<td>Month</td>
</tr>
<tr>
<td>MS</td>
<td>Milestone</td>
</tr>
<tr>
<td>NGOs</td>
<td>Non-Governmental Organisations</td>
</tr>
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<td>R&amp;I</td>
<td>Research and Innovation</td>
</tr>
<tr>
<td>RRI</td>
<td>Responsible Research Innovation</td>
</tr>
<tr>
<td>SDG</td>
<td>UN’s Sustainable Development Goal</td>
</tr>
<tr>
<td>SMART-ER</td>
<td>ECIU Research Institute for Smart European Regions</td>
</tr>
<tr>
<td>TAU</td>
<td>Tampere University</td>
</tr>
<tr>
<td>TUHH</td>
<td>Hamburg University of Technology</td>
</tr>
<tr>
<td>UAB</td>
<td>Universitat Autonoma de Barcelona</td>
</tr>
<tr>
<td>UAVR</td>
<td>Universidade de Aveiro</td>
</tr>
<tr>
<td>UiS</td>
<td>University of Stavanger</td>
</tr>
<tr>
<td>UNITN</td>
<td>Università degli Studi di Trento</td>
</tr>
<tr>
<td>UT</td>
<td>University of Twente</td>
</tr>
<tr>
<td>WP</td>
<td>Work Package</td>
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1 Introduction

Aiming to deliver solutions to current and future Sustainable Development Goals 11 (SDG11) challenges, the European Consortium of Innovative Universities Research Institute for Smart European Regions (hereafter ECIU SMART-ER) proposes to create and implement an ambitious Research and Innovation (R&I) Agenda to fulfil its vision. Part of the R&I agenda is the development and implementation of strategies for strengthening human capital of the consortium. According to Research Institute for Smart European Regions project (hereafter ECIU SMART-ER project), human capital refers to 'researchers and technical staff, and their knowledge, skills, attitudes, values, attributes (including creativity, entrepreneurship and innovation'). Work Package 3 (hereafter WP3) is instrumental in strengthening the ECIU SMART-ER human capital by the establishment of the ECIU SMART-ER Academy (WP activity 3.1), whereas the overall aim is to generate knowledge and equip researchers, with a combination of skills and forward-looking competencies (e.g. open science, research integrity, interdisciplinary and entrepreneurial competencies) suitable to address complex societal challenges. Therefore, activity 3.1 proposes two training programmes: an online PhD training programme and an open science and leadership blended-training programme. The programmes are based on information gathered together with ECIU SMART-ER partners. The process to gather the information comprises three main activities: review documents from European Commission (hereafter EC), map training activities and survey researchers from the institutional partners. We start by reviewing the documentation referred in the project, namely EU Principles for Innovative Doctoral Training (European Commission, 2011), the European Commission Skills Agenda (European University Association, 2020; European Commission, 2017), EU Modernization Agenda for Higher Education (European Commission, 2011), Key Competences for Lifelong Learning (European Commission, 2018), and Open Science (Foster, n.d.). The review provides an overview of the knowledge, skills and competences, the collaborations (e.g. academic and non-academic such as non-governmental organisations (NGOs), industrial partners), the quality assurance, and learning and research environments that should integrate the training programmes. The mapping and surveying exercises collect information about training activities organised by the institutional partners and the participation and interests of their researchers in professional development activities. The mapping exercise resulted in a comprehensive list of courses targeting researchers in different moments of their careers (i.e. from R1 to R4) (see Error! Reference source not found. for full list of training activities mapped). The surveys provide an overview of what type of training activities researchers participate (e.g. topics, workload, organizer, and format) and which they find relevant for the future (see Error! Reference source not found. for their responses). The training programmes will be piloted in activity 3.3, whilst their impact and validation will be carried out in activity 3.4.

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1In this document, we define “researchers” according to the European Framework for Research Careers (European Commission, 2011), i.e. researchers R1, R2, R3 and R4. Researcher R1 (first stage researcher) refers to individuals doing research under supervision in industry, research institutes or universities, and includes doctoral candidates. Researcher R2 (recognised researcher) refers to PhD holders who have not yet established a significant level of independence, and researchers with an equivalent level of experience and competence. Researcher R3 (established researcher) refers to researchers who have developed a level of independence. Researcher R4 (leading researcher), which refers to researchers leading their research area or field. It would include the team leader of a research group or head of an industry R&D laboratory.
2 Objectives

This document has the following objectives:

- Define ECIU SMART-ER Academy,
- Identify the training activities organised by the ECIU SMART-ER institutional partners,
- Identify the training activities researchers participate in and the ones they are interested in,
- Describe the two training programmes of the ECIU SMART-ER Academy, and
- Propose a plan for implementation of the ECIU SMART-ER Academy.

3 Define ECIU SMART-ER Academy

The overall aim of the ECIU SMART-ER Academy is to contribute to the capacity building and, therefore, strength the human capital of ECIU University. ECIU SMART-ER Academy comprises two training programmes for the consortium researchers on different stages of their careers (i.e. from R1 to R4). The ECIU SMART-ER draws on challenge-based approaches to build and strengthen researchers’ capacities in forward-looking areas, namely open science, citizen science, and research integrity, interdisciplinary, challenge-based research (hereafter CBR), entrepreneurial competencies suitable to address complex societal challenges. By strengthening competences and skills of the researchers in the aforementioned areas will enable them to jointly work and with non-academic stakeholders on complex and authentic challenges at local, regional and international levels. The programmes combine online (ECIU SMART-ER Academy) and place-based activities.

The ECIU SMART-ER Academy comprises two programmes: the online PhD training programme and the open science and leadership blended-training programme. The **Online PhD Training Programme** aims to train PhD students with the skills needed to face unpredictable and changeable future research-related activities. It includes the development of skills in alignment with the EC Innovative Doctoral Training Principles (IDTP) (European Commission, 2011), the New Skills Agenda (European University Association, 2020) and the Modernisation Agenda (European Commission, 2011), using challenge-based learning (hereafter CBL) (European Consortium of Innovative Universities (ECIU), n.d.) as main approach. All the activities run virtually, and they include a variety of formats, from workshops to meetings, conferences, seminars, discussion meetings, etc. We highly recommend that the training activities involve experts from different research fields and sectors promoting interaction between academic and no-academic experts. They can act as organisers, guest speakers, facilitators or consultants in the training activities. The **Open Science and Leadership Blended-Training Programme** provides ECIU SMART-ER researchers and researcher-leaders with the skills able to tackle the challenges of leading multidisciplinary research teams and networks of researchers, the complexities of collaboration with multiple stakeholders with non-academic motivations (e.g. political, economic, power-based) and the emerging need to act as a responsible agent for change in the complex social-economic system. Aligned with WP4, public-engagement training will be provided to equip citizen-science project leaders with needed methodologies and skills. Training will also be provided to upgrade researcher-leaders’ skills in preparing project proposals, in holding workshops with the possibility of “pre-proposal preparation” events or “pitch-the-project-idea events”, and also to draw up a specific list of potential project-funding programmes beyond the upcoming Horizon Europe.
4 Map training activities

The mapping exercise was conducted between July 2021 and August 2021, after requesting the twelve partners for the web links to platforms and/or institutional units responsible for organizing training activities. In order to proceed with mapping, the links provided had to fulfil two criteria, which are open access to training activities information, and that this information available must be in English. Once these two criteria were met, the following information was collected:

- Title of training activity,
- Webpage,
- Learning goals,
- Format,
- Workload or European Credit Transfer System (hereafter ECTS),
- Responsible for the training,
- Target audience,
- Available to other audiences,
- No. of seats available,
- Relation to SDG 11 (if any),
- Time, frequency and duration,
- Language, and
- Payment of a fee.

In total 172 training activities are listed across nine institutional partners; where 93 target PhDs and 79 target researchers. Table 1 provides the no. of training activities organised by the institutional partners. See Error! Reference source not found. for full list of training activities mapped.

Table 1: No. of training activities organised by the institutional partners

<table>
<thead>
<tr>
<th>SMART-ER partner</th>
<th>No. activities for PhD students</th>
<th>No. of activities for researchers</th>
<th>Information available online</th>
<th>Information in English</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Twente (UT)</td>
<td>19</td>
<td>18²</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Aalborg University (AAU)</td>
<td>22</td>
<td>12²</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Dublin City University (DCU)</td>
<td>--</td>
<td>27</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Kaunas University of Technology (KTU)</td>
<td>15</td>
<td>7²</td>
<td>Yes</td>
<td>Yes³</td>
</tr>
<tr>
<td>Linköping University (LiU)</td>
<td>4</td>
<td>10²</td>
<td>Yes</td>
<td>Yes³</td>
</tr>
<tr>
<td>Tampere University (TAU)</td>
<td>12</td>
<td>--</td>
<td>Yes</td>
<td>Yes³</td>
</tr>
<tr>
<td>Hamburg University of Technology (TUHH)</td>
<td>7</td>
<td>--</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

² Also for PhD, or doctoral candidates, and other early career researchers.
³ It included both descriptions in English and in native language (e.g. Norwegian or Lithuanian). Only the training activities with information in English were included in the mapping.
### SMART-ER partner

<table>
<thead>
<tr>
<th>SMART-ER partner</th>
<th>No. activities for PhD students</th>
<th>No. of activities for researchers</th>
<th>Information available online</th>
<th>Information in English</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universidade de Aveiro (UAVR)(^3)</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Universitat Autonoma de Barcelona (UAB)</td>
<td>2</td>
<td>--</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>University of Stavanger (UiS)</td>
<td>8</td>
<td>--</td>
<td>Yes</td>
<td>Yes(^3)</td>
</tr>
<tr>
<td>Università degli Studi di Trento (UNITN)</td>
<td>4</td>
<td>5(^2)</td>
<td>Yes</td>
<td>Yes(^3)</td>
</tr>
<tr>
<td>Institut National des Sciences Appliquées (INSA)(^4)</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>93</strong></td>
<td><strong>79</strong></td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

According to the topics they address, the training activities can be clustered in three main groups, which are:

- Activities related to research and teaching (e.g. doctoral course on research methods, virtue-based ethics and research integrity, and becoming a teacher in Higher Education),
- Activities related to general skills (e.g. project management, academic writing, and presentation skills boot camp), and
- Activities related to sustainability science, sustainable development and SDG 11 (e.g. online PhD course on Advanced LCA – Consequential and IO-based Life Cycle Assessment, nature-based solutions in Urban Planning, and interdisciplinary perspectives on sustainable development).

The activities also show a range of formats (e.g. online, blended or face-to-face; lectures, workshops, seminars, summer schools, boot camps), learning goals and workload. In sum, this mapping exercise allowed to identify which activities the institutional partners organise and take them as example to propose the ECIU SMART-ER training programmes. Additionally, the data collected confirms the active commitment of the partners in organising training activities for their academic staff and in different stages of their career.

\(^4\) Information available only in their native language, i.e. Portuguese or French.
5 Survey researchers

Two surveys were developed between May 2021 and June 2021, one targeting PhD students and the other targeting remaining researchers. Before its distribution, the surveys were piloted in collaboration with WP 3 activities leaders and revised accordingly. The distribution of the surveys was done by requesting the partners to share the links of the surveys with at least twelve researchers. The selection of researchers should consider the balance between gender and the stage of their careers (i.e. from R1 to R4). The survey was anonymous and composed by three parts, which were: 1) demographic information, 2) participation on existing training programmes, courses and activities, and 3) suggestion for further training activities. The surveys include 19 to 20 close, multiple-choice questions, where some questions only allow one option as valid answer and others allow the selection of multiple options. Additionally, the no. of questions a participant has to answer depend on the answers he/she gives to question no. 1 (i.e. first question of the second part of the survey) and to question no. 2 (i.e. first question of the third part of the survey). For example, the second and third parts of the survey start with a yes/no question, which determine the progression of the survey and which questions open to be answered. If a participant answers yes to these questions, follow up questions will appear and are required to be answered in order to complete the survey. If a participant answers no, or no answer, then follow up question will not be open and he/she moves the next stage to end the survey. Figure 1 illustrates the structure used in the surveys.

![Figure 1 Structure and organisation of the surveys](image-url)
Sixty-eight PhD students answered the survey; whereas 14 are partially complete and 54 are complete surveys (see table 2). Overall, the results of the completed surveys (n=54) show that:

- 83% (n=45) participated in research training activities, whilst 17% (n=9) answered ‘no’ and 0% (n=0) answered ‘no answer’;
- General skills (e.g. academic writing project management) is the main topic addressed by the training activities participants attended, with 80% (n=36) PhD students attended. This is followed by research practice and skills, and digitalisation and digital skills, 76% (n=34) and 20% (n=9) respectively. Note that citizen science and public engagement, and challenge-based research are among the less addressed topics by the training activities participants attended to, with 7% (n=3) and 2% (n=1) respectively.
- 64% (n= 29) answered that it is compulsory to participate in training activities as part of PhD studies, or doctoral programme, whilst 33% (n=15) answered ‘no’ and 2% (n=1) answered ‘no answer’;
- Opportunity for developing new knowledge and skills, personal interest and curiosity, and complete the course load as part of the PhD programme, with 89% (n=40), 73% (n=33) and 51% (n=23) respectively, are the main reasons to participate in research training activities;
- Most common training formats used in the training activities are: lectures (71%, n= 32), workshops (67%, n=30) and seminars (62%, n=28);
- 61% (n=33) find relevant to develop other research topics and skills that are not provided by their institution, namely research practice and skills (48%, n=16), digitalisation and digital skills (45%, n=15), interdisciplinary research (42%, n=14), citizen science and public engagement (33%, n=11) and challenge-based research (33%, n=11).

Table 2: No. of responses from PhD students

<table>
<thead>
<tr>
<th>SMART-ER Partner</th>
<th>Partially completed surveys</th>
<th>Complete surveys</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Twente (UT)</td>
<td>0</td>
<td>2</td>
<td>2.9%</td>
</tr>
<tr>
<td>Aalborg University (AAU)</td>
<td>0</td>
<td>3</td>
<td>4.3%</td>
</tr>
<tr>
<td>Dublin City University (DCU)</td>
<td>3</td>
<td>13</td>
<td>23.2%</td>
</tr>
<tr>
<td>Kaunas University of Technology (KTU)</td>
<td>1</td>
<td>2</td>
<td>4.3%</td>
</tr>
<tr>
<td>Linköping University (LIU)</td>
<td>0</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Tampere University (TAU)</td>
<td>0</td>
<td>1</td>
<td>1.5%</td>
</tr>
<tr>
<td>Hamburg University of Technology (TUHH)</td>
<td>6</td>
<td>8</td>
<td>20.3%</td>
</tr>
<tr>
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<td>5</td>
<td>7.2%</td>
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<td>3</td>
<td>5.8%</td>
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<td>Università degli Studi di Trento (UNITN)</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>14</strong></td>
<td><strong>54</strong></td>
<td><strong>68</strong></td>
</tr>
</tbody>
</table>
Seventy-three researchers answered the survey; where ten refers to partially complete surveys and sixty-four refers to complete surveys (see table 3). In overall, the results of the completed surveys (n = 63) show that:

- 59% (n=37) researchers participated in training courses and activities, whilst 38% (n=24) answered ‘no’ and 3% (n=2) answered ‘no answer’;
- Research practice and skills (78%, n=29) is typical training activities researcher participate, followed by generic skills (70%, n=26), digitalisation and digital skills (27%, n=10), and interdisciplinary research (22%, n=8). Note that citizen science and public participation is not a typical topic addressed by the training activities the participants training attend to (0%, n=0);
- 65% (n=24) state that is not compulsory to participate in training activities as part of their institutional policy for professional development, whilst 24% (n=9) answer ‘yes’ and 11% (n=4) answered ‘no answer’;
- Personal interest and curiosity, opportunity for developing new knowledge and skills, and develop new ideas and partnerships are the main reasons to participate in training activities, with 86% (n=32), 59% (n=22), and 51% (n=19) with the answers respectively;
- The most common formats used in the training activities the participants attended to are: workshops (incl. conferences) (84%, n= 31), seminars (70%, n=26) and lectures (46%, n=17);
- 60% (n=38) stated that there are other research topics and skills that they find relevant for their professional development, but they are not addressed by their institution, namely research practice and skills (68%, n=26), citizen science and public engagement (47%, n=18), generic skills (42%, n=16), challenge-based research (42%, n=16) and interdisciplinary research (42%, n=16).

Table 3: No. of responses from researchers

<table>
<thead>
<tr>
<th>SMART-ER Partner</th>
<th>Partially complete surveys</th>
<th>Complete surveys</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
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<td>2</td>
<td>4.1%</td>
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<td>9.6%</td>
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<td>5.5%</td>
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<td>21</td>
<td>31.5%</td>
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<td>Universitat Autonoma de Barcelona (UAB)</td>
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<td>6</td>
<td>8.2%</td>
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<td>University of Stavanger (UIS)</td>
<td>3</td>
<td>3</td>
<td>8.2%</td>
</tr>
<tr>
<td>Università degli Studi di Trento (UNITN)</td>
<td>0</td>
<td>7</td>
<td>9.6%</td>
</tr>
<tr>
<td>Institut National des Sciences Appliquées (INSA)</td>
<td>1</td>
<td>2</td>
<td>4.1%</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>63</td>
<td>73</td>
</tr>
</tbody>
</table>
Overall, the results show committed and interested researchers in professional development activities, who see these activities as opportunities to keep themselves update and to develop new knowledge and skills. Furthermore, the researchers also show an awareness of research trends and paths recommended by the EC, namely, citizen science, digitalisation, interdisciplinary research, and collaboration with other non-academic partners, challenge-based research. In both groups of participants, PhDs and researchers answered that citizen science and public engagement, challenge-based research and interdisciplinary research are the less addressed topics in the training activities participants attend to. However, these are also the topics researchers find relevant to be addressed in the future training activities along with research practice and skills, and generic skills.
6 ECIU SMART-ER Virtual Academy

ECIU SMART-ER Academy comprises two programmes: the Online PhD Training Programme and the Open Science and Leadership Blended-Training Programme. The Online PhD Training Programme and the Open Science and Leadership Blended-Training Programme comprise nine and eight courses, respectively. The following describes the courses from both programmes in terms of overall learning goals, workload, formats, partners with similar activities, and estimated cost of the course.

6.1 Online PhD Training Programme
Table 4 presents the nine courses of the online PhD training programme comprises.

### Table 4: Online PhD training programme

<table>
<thead>
<tr>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Citizen Science and Public Engagement (2 ECTS, or 60h)</td>
</tr>
<tr>
<td>2. Basic Principles of Challenge Based Learning (CBL) (2 ECTS, or 60h)</td>
</tr>
<tr>
<td>3. Introduction to Challenge Based Research (CBR) (1 ECTS, or 30h)</td>
</tr>
<tr>
<td>4. Interdisciplinary Research (2 ECTS, or 60h)</td>
</tr>
<tr>
<td>5. Research Design and Excellence (3 ECTS, or 90h)</td>
</tr>
<tr>
<td>6. Research Ethics and Integrity (2 ECTS, or 60h)</td>
</tr>
<tr>
<td>7. Project Management (2 ECTS, or 60h)</td>
</tr>
<tr>
<td>8. Professional Communication (1 ECTS, or 30h)</td>
</tr>
<tr>
<td>9. Academic Writing (1 ECTS, or 30h)</td>
</tr>
</tbody>
</table>

**Other information**

Total workload of the programme = 16 ECTS, or 480h

6.1.1 Course on Citizen Science and Public Engagement
This course is an introductory course for both PhD students and researchers. ‘Citizen Science actively involves the public in scientific research that generates new knowledge or understanding, and thus has the potential to bring together science, policy makers, and society as a whole in an impactful way. As a core dimension of Open Science, it opens up the opportunity for all members of society to take an active role in research, innovation and the development of evidence-based policy, at local, national and EU levels.’ (EU-Citizen Science, n.d.). It is a flexible concept, capable to be applied in different contexts and across different disciplines. The mapping shows that there are no courses on citizen science and public engagement being organised at moment by the institutional partners. On the other hand, the surveys show that no researchers had training related with citizen science and that they find it relevant to have in the future. Therefore, we will propose an introductory course with goal to introduce citizen science key concepts, principles and typologies.

**Overall learning goals**

At the end of the course, participants should be able to:

- Define citizen science;
- Name the different typologies, which have been created to explain the different levels of public participation in citizen science;
- Identify challenges and potentials when integrating in citizen science activities in research;
- Design a strategy to integrate citizen science activities in research projects.
Expected workload
2 ECTS, or 60h

Formats
The responsible(s) and organiser(s) of the course will decide the suitable formats. However, we would like to suggest the use of active and innovative learning approaches. For example, we suggest flipped classroom is one of the learning approaches for the course, using a variety of resources (e.g. videos, articles) and assignments (e.g. quizzes or short essays) as preparation, followed by a more interactive and participant-directed approach, with use of online tools that promote interaction with citizen science experts and group work and plenary discussions.

Institutional partners with similar activities
Currently none. However, UAB is WP leader on Citizen Science and Public Engagement at ECIU SMART-ER project and KTU has already started developing a course on Citizen Science under an obligation to TIME4CS project (funded under EU programme “Horizon 2020” (hereinafter – H2020), Grant ID 101006201). The course will be ready and open by March 2022.

6.1.2 Course on Basic Principles of Challenge Based Learning (CBL)
One of the pillars of the European Consortium of Innovative Universities (ECIU) is Challenge Based Learning (CBL), where ‘learners, teachers, researchers, representatives of businesses and public organisations - join forces across a variety of disciplines to solve real-life problems’ using this educational model (European Consortium of Innovative Universities (ECIU), n.d.). ECIU has been implementing and evaluating a series of activities (e.g. workshops, roundtables, educational labs, etc.) to train educators in developing knowledge and skills on CBL and becoming teamchers, for example. Consequently, we propose the involvement of the TUHH (ECIU WP leader on Challenge Based Learning) in organising a course on CBL for ECIU SMART-ER Academy.

This course integrates both programmes, i.e. is offered to PhD students and researchers. It takes into consideration that teaching and learning is a major part of researchers’ professional practice, including PhD students. Through this course, researchers would have the opportunity to deepen their knowledge and skills on CBL but also receive tips and strategies on how establish partnerships with external partners to propose challenges to the ECIU.

Overall learning goals
At the end of the course, participants should be able to:

- Describe the CBL principles and framework;
- Describe the role of the teacher, the student and the other actors in CBL;
- Describe different type of challenges, namely nano-, standard- and strategic challenges;
- Develop a strategy to design challenges in collaboration with external partners.

Expected workload
2 ECTS, or 60h

Formats
The responsible(s) and organiser(s) of the course will decide the suitable formats. However, we would like to suggest the use of active and innovative learning approaches. For example, we suggest flipped classroom is one of the learning approaches for the course, using a variety of resources (e.g. videos, articles) and assignments (e.g. quizzes or short essays) as preparation, followed by a more
interactive and participant-directed approach, with use of online tools that promote interaction with citizen science experts and group work and plenary discussions.

**Institutional partners with similar activities**

LiU, KTU, TUHH

### 6.1.3 Course on Introduction to Challenge Based Research (CBR)

CBR is an approach to research where partners from different sectors, namely industry/business, education, government, civil society and citizens (societal partners), joint forces to address the challenges the society currently face. The overall objective is to arrive at solutions. Within this concept, the challenges require ill-structured scientific knowledge and should address larger, complex problems. Different from CBL, which emphasizes knowledge transformation between individuals and groups, CBR focuses more on generating new knowledge through research activities, interdisciplinary collaboration and public engagement. We propose an introductory course on CBR targeting both PhD students and researchers, which will provide knowledge to participants on key concepts and framework of CBR. Furthermore, it offers strategies on how to deal with bigger, multi-facet challenges in a joint research programme, collaborate more flexibly with academic and non-academic stakeholders and ECIU partners.

**Overall learning goals**

By the end of the course, participants should be able to:

- Define CBR and challenge-based innovation (CBI);
- Distinguish CBL, CBR and CBI;
- Describe principles and framework of CBR;
- Reflect on different strategies to develop challenge-based research projects, or take challenge-based approaches into an existing project.

**Expected workload**

1 ECTS, or 30h

**Formats**

The responsible(s) and organiser(s) of the course will decide the suitable formats. However, we would like to suggest the use of active and innovative learning approaches. For example, we suggest flipped classroom is one of the learning approaches for the course, using a variety of resources (e.g. videos, articles) and assignments (e.g. quizzes or short essays) as preparation, followed by a more interactive and participant-directed approach, with use of online tools that promote interaction with citizen science experts and group work and plenary discussions.

**Institutional partners with similar activities**

Currently none. However, UT worked on a definition of CBR as part of clear definitions on what CBR is and what it means for organising research as part of ECIU long-term joint research strategy.

### 6.1.4 Course on Interdisciplinary Research

Interdisciplinarity is one of the two crosscutting themes that underpin the ECIU University joint research strategy on addressing common research challenges related to SDG 11 (Sustainable Cities and Communities) topics (European Consortium of Innovative Universities (ECIU), n.d.). Additionally, interdisciplinary research options (opportunities for cross-fertilization between disciplines) are the third principle of EU Principles for Innovative Doctoral Training (European Commission, 2011). A course on interdisciplinary research provides knowledge and skills to participants on key concepts of
interdisciplinarity and on how researchers can design, or make their research projects more interdisciplinary. Only two partners organise a course related to interdisciplinary research design; therefore, we propose this as an introductory course based on the descriptions available from the partners. The course is offered to both PhD students and researchers.

**Overall learning goals**

At the end of the course, participants should be able to:

- Define interdisciplinarity and distinguish it from disciplinarity and multi-disciplinarity;
- Name different strategies to develop interdisciplinary research projects and programmes, including the setup of interdisciplinary ecosystems that include not only multi-disciplinary researchers but also societal partners;
- Apply different strategies to design an interdisciplinary research project from the start (i.e. “born” interdisciplinary), or make an existing project more interdisciplinary (i.e. “becoming” interdisciplinary).

**Expected workload**

2 ECTS, or 60h

**Formats**

The responsible(s) and organiser(s) of the course will decide the suitable formats. Currently, the institutional partners that have similar training offers use lectures as main formats. However, we would like to suggest the use of active and innovative learning approaches.

**Institutional partners with similar activities**

AAU, UiS

6.1.5  **Course on Research Design and Excellence**

The first principle of EU Principles for Innovative Doctoral Training (European Commission, 2011) is research excellence, considered fundamental to all doctoral education and from which all other elements flow, namely the academic critical mass and world-leading rigours, original and significant research. The aim is to train an academic generation to be more creative, critical and autonomous, capable to take intellectual risks and push the boundaries of frontier research. Interdisciplinarity, transferable skills and collaboration with industry partners contribute for research excellence; however, it is needed to strengthen the foundations and provide the knowledge and skills that deepen doctoral students’ understanding of the research design and process (European Commission, 2011). This is a general course on research design and excellence, and provides a holistic view of the research process by addressing the following topics: epistemology and theory of science, research problems and methodologies, methods for data collection and analysis, validity and reliability. The course has a workload of 3 ECTS and there is a possibility to divide it in five modules, where specific topics are addressed. As example, module 1 addresses research questions and goals (0.5 ECTS), module 2 addresses research methodologies (1 ECTS), module 3 addresses methods and instruments relevant for working with qualitative data (0.5 ECTS), module 4 addresses methods and instruments relevant for working with quantitative data (0.5 ECTS), and module 5 addresses epistemology and theory of science (incl. validity and reliability) (0.5 ECTS). Interdependency and progression between the modules should be an aspect to consider as well as PhD students using their research as case example to apply the concepts learned.

Half of the partners offer at least one course that addresses one or more of the topics aforementioned. Therefore, this provides the possibility to involve different partners in delivering the
Overall learning goals
By the end of the course, participants should be able to:

- Identify and formulate research problems and goals;
- Develop a research design with well-argued research problem(s) and objectives, and aligned with type of methodology, and methods and tools for data collection and analysis. Examples are qualitative, quantitative and mixed methods research designs; intervention research, observations, surveys, text analytics, statistical analysis, analysis and visualisation of qualitative data;
- Reflect on the validity and reliability in different types of research designs;
- Position the research design within an epistemological framework (e.g. post-positivism, socio-constructivism, transformative, pragmatic).

Expected workload
3 ECTS, or 90h

Formats
The responsible(s) and organiser(s) of the course will decide the suitable formats. Currently, the institutional partners that have similar training offers use lectures and seminars as main formats. However, we would like to suggest the use of active and innovative learning approaches.

Institutional partners with similar activities
AAU, KTU, LiU, TAU, UAB, UiS, UT

6.1.6 Course on Research Ethics and Integrity
Research ethics and integrity is the first out of four courses on transferable skills recommended by EU Principles for Innovative Training transferable skills (European Commission, 2011). The course aims to equip PhD students with knowledge and skills on research ethics, research integrity and responsible research conduct.

Overall learning goals
By the end of the course, participants should be able to:

- Distinguish between responsible conduct of research, research misconduct, and questionable research practices;
- Link these to The European Code of Conduct on Research Integrity (ECoC) (ALLEA - All European Academies, 2017);
- Reflect on the ethical issues and research conduct to consider when developing a project proposal and while doing research.

Expected workload
2 ECTS, or 60h

Formats
The responsible(s) and organiser(s) of the course will decide its format. Currently, the partners that have similar training offers use lectures and workshops as main formats. However, we would like to suggest the use of active and innovative learning approaches.
6.1.7 Course on Project Management

Project management is the second out of four courses on transferable skills recommended by EU Principles for Innovative Training’ transferable skills (European Commission, 2011). The course aims to equip PhD students with knowledge and skills to manage successfully their projects, throughout their entire lifecycle, i.e. from the idea until the delivery of the final “report” (i.e. PhD thesis) by using different approaches, techniques and tools.

Overall learning goals

At the end of the course, participants should be able to:

- Define what needs to be managed in a research project (e.g. stakeholders, resources, time, deliverables, etc.);
- Describe different tools and techniques to manage a project;
- Select and apply tools and techniques to manage their project.

Expected workload

2 ECTS, or 60h

Formats

The responsible(s) and organiser(s) of the course will decide the suitable formats. Currently, the partners that have similar training offers use lectures and online workshops as main formats. However, we would like to suggest the use of active and innovative learning approaches.

6.1.8 Course on Professional Communication

Professional communication is the third out of four courses on transferable skills recommended by EU Principles for Innovative Training’ transferable skills (European Commission, 2011). The goal of the course is to practice and reflect on the communication and presentation skills needed for different contexts, namely oral presentations (e.g. conference, pitching ideas) to different audiences (e.g. academic conferences and non-academic public presentation), using different aids (e.g. posters, PowerPoint) and in different environments (e.g. physical and virtual). Additionally, it provides several tips and strategies for participants to use during and after their PhD study.

Overall learning goals

At the end of the course, participants should be able to:

- Define communication and what makes a communicator effective;
- Describe different types of communication as part of their academic life and reflect on their communication skills for different contexts;
- Identify areas to improve on their communication skills;
- Select and apply different techniques and tools to communicate effectively and in different contexts.

Expected workload

1 ECTS, or 30h
SMART-ER

Format
The responsible(s) and organiser(s) of the course will decide its format. Currently, the partners that have similar training offers use lectures and workshops as main formats. However, we would like to suggest the use of active and innovative learning approaches.

Institutional partners with similar activities
AAU, KTU, TAU, TUHH, UAB, UT

6.1.9 Course on Academic Writing
Academic writing is the fourth out of four courses on transferable skills recommended by EU Principles for Innovative Training’ transferable skills (European Commission, 2011).

Overall learning goals
At the end of the course, participants should be able to:
- Know how to structure and write academic abstracts, articles and manographs;
- Know how to select a journal and evaluate journal requirements when preparing a manuscript for publication;
- Describe the review process and its different stages;
- Define plagiarism and what counts as plagiarism;
- Develop a checklist for academic writing (e.g. manuscript structure, language, reference, selection of journal, etc.).

Expected workload
1 ECTS, or 30h

Formats
The responsible(s) and organiser(s) of the course will decide the suitable formats. Currently, the partners that have similar training offers use lectures and workshops as main formats. However, we would like to suggest the use of active and innovative learning approaches.

Institutional partners with similar activities
AAU, KTU, TAU, TUHH, UAB, UNITN, UT
Open Science & Leadership Blended-Training Programme.

Table 5 presents the eight courses of the Open Science & Leadership Blended-Training Programme.

<table>
<thead>
<tr>
<th>Title</th>
<th>Credits/ECTS, Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Open Science (1 ECTS, or 30h)</td>
<td></td>
</tr>
<tr>
<td>2. Citizen Science and Public Engagement (2 ECTS, or 60h)</td>
<td></td>
</tr>
<tr>
<td>3. Basic Principles of Challenge Based Learning (CBL) (2 ECTS, or 60h)</td>
<td></td>
</tr>
<tr>
<td>4. Introduction to Challenge Based Research (1 ECTS, or 30h)</td>
<td></td>
</tr>
<tr>
<td>5. Interdisciplinary Research (2 ECTS, or 60h)</td>
<td></td>
</tr>
<tr>
<td>6. Research Communication (2 ECTS, or 60h)</td>
<td></td>
</tr>
<tr>
<td>7. Research Grants: From the Idea to the Winning Project (23 ECTS, or 6090h)</td>
<td></td>
</tr>
<tr>
<td>8. Leadership (1 ECTS, or 30h)</td>
<td></td>
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</tbody>
</table>

Other information

Total workload of the programme = 13 ECTS, or 390h

6.1.10 Course on Open Science

Open science relates with a sociological perspective that science is a social activity, a result of collaboration of different actors with social and economic impacts and interests. Therefore, its outputs should be publicly available for all, and for social good. Open science is more than to ‘make the primary outputs of publicly funded research results – publications and the research data – publicly accessible in digital format with no or minimal restriction’ (OECD, 2015, p. 7). It is also extending its openness to all phases of the research process and promoting sharing and collaboration among different partners and sectors right from the start. Open science comprises more than open access publications and open data; it also includes open source software, open collaboration, open peer review, open notebooks, open educational resources, open monographs, citizen science, or research crowdfunding. Open science approaches increase the efficiency and transparency of the research process, whilst it fosters responsible research innovation (hereafter RRI) by enabling the use and reuse of research outputs in new products and services (Foster, n.d.; OECD, 2015; European University Alliance, n.d.). The mapping shows that there are no courses on open science being organised at moment by the institutional partners for senior researchers; however, AAU has a course for PhD students entitled ‘Scholarly Communication for PhD Students in an Open Science Perspective: Online Profiles, Dissemination and Metrics’ (see appendix Error! Reference source not found., page Error! Bookmark not defined.). Taking the point of departure in this course and Open Science definition given above, we propose an introductory course as part of the ECIU SMART-ER Academy. The aim of the course is to provide knowledge on the key concepts, benefits and challenges of Open Science, the pillars and dimensions of RRI and the implications for practising research.

Overall learning goals

At the end of the course, participants should be able to:

- Define Open Science, its different approaches;
- Name benefits and challenges of the different approaches of Open Science;
- Relate different open science approaches with RRI;
- Reflect on Open Science approaches, RRI and their implications for practising research.

Expected workload
1 ECTS, or 30h

Formats
The responsible(s) and organiser(s) of the course will decide the suitable formats. However, we would like to suggest the use of active and innovative learning approaches. For example, we suggest flipped classroom is one of the learning approaches for the course, using a variety of resources (e.g. videos, articles) and assignments (e.g. quizzes or short essays) as preparation, followed by a more interactive and participant directed approach, with use of online tools that promote interaction with citizen science experts and group work and plenary discussions.

Institutional partners with similar activities
Currently none. However, KTU is a member of the European Open Science network “OpenAIRE” (https://www.openaire.eu/) that builds open science policies for EU, provides training and contributes to developing open science services and infrastructures. AAU has a PhD course on Scholarly Communication for PhD Students in an Open Science Perspective: Online Profiles, Dissemination and Metrics (find more information here).

6.1.11 Course on Citizen Science and Public Engagement
This course is an introductory course for both PhDs and researchers. ‘Citizen Science actively involves the public in scientific research that generates new knowledge or understanding, and thus has the potential to bring together science, policy makers, and society as a whole in an impactful way. As a core dimension of Open Science, it opens up the opportunity for all members of society to take an active role in research, innovation and the development of evidence-based policy, at local, national and EU levels.’ (EU-Citizen Science, n.d.). It is a flexible concept, capable to be applied in different contexts and across different disciplines. The mapping shows that there are no courses on citizen science and public engagement being organised at moment by the institutional partners. On the other hand, the surveys show that no researchers had training related with citizen science and that they find it relevant to have in the future. Therefore, we will propose an introductory course with goal to introduce citizen science key concepts, principles and typologies.

Overall learning goals
At the end of the course, participants should be able to:

- Define citizen science;
- Name the different typologies, which have been created to explain the different levels of public participation in citizen science;
- Identify challenges and potentials when integrating in citizen science activities in research;
- Design a strategy to integrate citizen science activities in research projects.

Expected workload
2 ECTS, or 60h

Formats
The responsible(s) and organiser(s) of the course will decide the suitable formats. However, we would like to suggest the use of active and innovative learning approaches. For example, we suggest flipped classroom is one of the learning approaches for the course, using a variety of resources (e.g. videos, articles) and assignments (e.g. quizzes or short essays) as preparation, followed by a more interactive and participant-directed approach, with use of online tools that promote interaction with citizen science experts and group work and plenary discussions.
Institutional partners with similar activities

UAB is WP leader on Citizen Science and Public Engagement at ECIU SMART-ER project and KTU has already started developing a course on Citizen Science under an obligation to TIME4CS project (funded by H2020, Grant ID 101006201). The course will be ready and open by March 2022.

6.1.12 Course on Basic Principles of Challenge-Based Learning (CBL)

One of the pillars of the European Consortium of Innovative Universities (ECIU) is Challenge-Based Learning (CBL), where ‘learners, teachers, researchers, representatives of businesses and public organisations - join forces across a variety of disciplines to solve real-life problems’ using this educational model (European Consortium of Innovative Universities (ECIU), n.d.). ECIU has been implementing and evaluating a series of activities (e.g. workshops, roundtables, educational labs, etc.) to train educators in developing knowledge and skills on CBL and becoming teachers, for example. Consequently, we propose the involvement of the TUHH (ECIU WP leader on Challenge Based Learning) in organising a course on CBL for ECIU SMART-ER Academy.

This course integrates both programmes, i.e. is offered to PhD students and researchers. It takes into consideration that teaching and learning is a major part of researchers’ professional practice, including PhD students. Through this course, researchers would have the opportunity to deepen their knowledge and skills on CBL but also receive tips and strategies on how establish partnerships with external partners to propose challenges to the ECIU.

Overall learning goals

At the end of the course, participants should be able to:

- Describe the CBL principles and framework;
- Describe the role of the teacher, the student and other actors in CBL;
- Describe different type of challenges, namely nano-, standard- and strategic challenges;
- Develop a strategy to design challenges in collaboration with external partners.

Expected workload

2 ECTS, or 60h

Formats

The responsible(s) and organiser(s) of the course will decide the suitable formats. However, we would like to suggest the use of active and innovative learning approaches. For example, we suggest flipped classroom is one of the learning approaches for the course, using a variety of resources (e.g. videos, articles) and assignments (e.g. quizzes or short essays) as preparation, followed by a more interactive and participant-directed approach, with use of online tools that promote interaction with citizen science experts and group work and plenary discussions.

Institutional partners with similar activities

LiU, KTU, TUHH

6.1.13 Course on Introduction to Challenge-Based Research (CBR)

CBR is an approach to research where partners from different sectors, namely industry/business, education, government, civil society and citizens (societal partners), joint forces to address the challenges the society currently face. The overall objective is to arrive at solutions. Within this concept, the challenges require ill-structured scientific knowledge and should address larger, complex problems. Different from CBL, which emphasizes knowledge transformation between individuals and groups, CBR focuses more on generating new knowledge through research activities,
interdisciplinary collaboration and public engagement. We propose an introductory course on CBR targeting both PhD students and researchers, which will provide knowledge to participants on key concepts and framework of CBR. Furthermore, it offers strategies on how to deal with bigger, multi-facet challenges in a joint research programme, collaborate more flexibly with academic and non-academic stakeholders and ECIU partners.

**Overall learning goals**

By the end of the course, participants should be able to:

- Define CBR and challenge-based innovation (hereafter CBI);
- Distinguish CBL, CBR and CBI;
- Describe principles and framework of CBR;
- Reflect on different strategies to develop challenge-based research projects, or take challenge-based approaches into an existing project.

**Expected workload**

1 ECTS, or 30h

**Formats**

The responsible(s) and organiser(s) of the course will decide the suitable formats. However, we would like to suggest the use of active and innovative learning approaches. For example, we suggest flipped classroom is one of the learning approaches for the course, using a variety of resources (e.g. videos, articles) and assignments (e.g. quizzes or short essays) as preparation, followed by a more interactive and participant-directed approach, with use of online tools that promote interaction with citizen science experts and group work and plenary discussions.

**Institutional partners with similar activities**

Currently none. However, UT worked on a definition of CBR as part of clear definitions on what CBR is and what it means for organising research as part of ECIU long-term joint research strategy.

**6.1.14 Course on Interdisciplinary Research**

Interdisciplinarity is of the two crosscutting themes that underpin the ECIU University joint research strategy on addressing common research challenges related to SDG 11 (Sustainable Cities and Communities) topics (European Consortium of Innovative Universities (ECIU), n.d.). Additionally, interdisciplinary research options (opportunities for cross-fertilization between disciplines) are the third principle of EU Principles for Innovative Doctoral Training (European Commission, 2011). A course on interdisciplinary research provides knowledge and skills to researchers on key concepts of interdisciplinary and on how researchers can design, or make their research projects more interdisciplinary. Only two partners organise a course related to interdisciplinary research design; therefore, we propose this as an introductory course based on the descriptions available from the partners. The course is offer to both PhD and researchers.

**Overall learning goals**

At the end of the course, participants should be able to:

- Define interdisciplinarity and distinguish it from disciplinarity and multi-disciplinarity;
- Name different strategies to develop interdisciplinary research projects and programmes, including the setup of interdisciplinary ecosystems that include not only multi-disciplinary researchers but also societal partners;
- Apply different strategies to design an interdisciplinary research project from the start (i.e. “born” interdisciplinary), or make an existing project more interdisciplinary (i.e. “becoming” interdisciplinary).

**Expected workload**

2 ECTS, or 60h

**Formats**

The responsible(s) and organiser(s) of the course will decide the suitable formats. Currently, the institutional partners that have similar training offers use lectures as main format. However, we would like to suggest the use of active and innovative learning approaches.

**Institutional partners with similar activities**

AAU, LiU, UiS

**6.1.15 Course on Research Communication**

Researchers often need to be able to communicate their work clearly and in an accessible manner. They need to collaborate with others and disseminate research findings, its methodologies, applications and implications. Clear messages and coherent communication are essential when researchers want to work with other researchers, from other fields, with media, civil society, or industry, for example. Good communication skills are essential and in alignment with concepts such as interdisciplinary research, open science, citizen science and public engagement – the pillars for research and innovation strategy of ECIU University.

**Overall learning goals**

At the end of the course, participants should be able to know:

- How to get your message out, and to different target audiences (e.g. media, foundation, industry and business partners);
- How to 'translate' scientific language into language that lay people can understand;
- How to give interviews and work effectively with the media.
- How to pitch the project for potential funding agencies;

**Expected workload**

2 ECTS, or 60h

**Formats**

The responsible(s) and organiser(s) of the course will decide the suitable formats. Currently, the partners that have similar training offers use lectures and workshops as main formats. However, we would like to suggest the use of active and innovative learning approaches.

**Institutional partners with similar activities**

AAU, DCU

**6.1.16 Course on Research Grants: From the Idea to the Winning Project**

The course aims to deepen participants’ knowledge and skills in pitching clear research ideas to peers, writing competitive joint research proposals, and applying for funding at European level. The course also strengthens existing collaborations among partners and potential the creation of joint research projects among researchers.
**Overall learning goals**

At the end of the course, participants should be able to:

- Define and develop a research idea, which is also understood by peers and other stakeholders;
- Identify and assess different funding schemes at European level, namely Horizon Europe;
- Describe the process of writing and reviewing research proposals;
- Describe the strength of collaboration in research, and how to elaborate proposals jointly;
- Identify key elements to prepare a Curriculum Vitae aligned with evaluation criteria of the identified funding schemes;
- Define an action plan to apply for research grants.

**Expected workload**

2 ECTS, or 60h

**Formats**

The responsible(s) and organiser(s) of the course will decide the suitable formats. Currently, the partners that have similar training offers use lectures, peer-reviews and workshops as main formats. However, we would like to suggest the use of active and innovative learning approaches.

**Institutional partners with similar activities**

AAU, DCU, UT

### 6.1.17 Course on Leadership

Leadership captures the essentials of being able to inspire and empower others. For example, an effective leader provides the opportunity for others to learn and to grow. It also motivates others to support in pursuing the organization’s goals. Therefore, understanding the role of a leadership in an organisation, what strategies to use and implement to become an effective leader are at outmost important for researchers nowadays (Harvard Business Review, 2004). The mapping exercise allows identifying a partner that offers training on leadership. Dublin City University (DCU) presents different activities aiming to develop leadership skills, namely presentations, courses and full programmes. The activities also highlight different contexts and the need to develop leadership skills, such as gender (e.g. the AURORA programme and the development of leadership skills on women researchers and their representativeness in academia), and motivation (online webinar on more practical aspects of leadership such as leadership styles).

**Overall learning goals**

At the end of the course, participants should be able to:

- Understand leadership and the role of a leader by defining leadership and different leadership styles,
- Reflect on his/ her leadership style;
- Identify areas for improvement one’s leadership style;
- Develop an action plan to become effective leader.

**Expected workload**

1 ECTS, or 30h

**Formats**
The responsible(s) and organiser(s) of the course will decide the suitable formats. However, we would like to suggest the use of active and innovative learning approaches.

**Institutional partners with similar activities**

DCU
7 Budget and estimated costs

The total budget allocated to implement the ECIU SMART-ER Academy training programmes is 75.000€. The ECIU SMART-ER Management Structure will transfer the funds to the partner institutions that organise and deliver the training courses for the ECIU SMART-ER Academy. Each course has an estimated cost calculated using the project budget as reference and based on the no. of its ECTS (1 ECTS = 30 hours), the average hour rate for a senior researcher and other direct costs. For one ECTS, the estimated cost is calculated as follows:

\[ \text{Direct personal cost} \times \text{no. of course ECTS hours (e.g. ECTS = 30h)} + \text{other direct costs (max. 1000€)}. \]

<table>
<thead>
<tr>
<th>Title</th>
<th>Estimated cost (in €)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Courses common to both programmes(^5)</td>
<td></td>
</tr>
<tr>
<td>Citizen science and Public Engagement (2 ECTS)</td>
<td>6500</td>
</tr>
<tr>
<td>Basic Principles of Challenge Based Learning (CBL) (2 ECTS)</td>
<td>6500</td>
</tr>
<tr>
<td>Challenge Based Research (CBR) (1 ECTS)</td>
<td>3250</td>
</tr>
<tr>
<td>Interdisciplinary Research (2 ECTS)</td>
<td>6500</td>
</tr>
<tr>
<td>Courses of online PhD training programme(^6)</td>
<td></td>
</tr>
<tr>
<td>General Course on Research Design and Excellence (3 ECTS)</td>
<td>9750</td>
</tr>
<tr>
<td>Research Ethics and Integrity (2 ECTS)</td>
<td>6500</td>
</tr>
<tr>
<td>Project Management (2 ECTS)</td>
<td>6500</td>
</tr>
<tr>
<td>Professional Communication (1 ECTS)</td>
<td>3250</td>
</tr>
<tr>
<td>Academic Writing (1 ECTS)</td>
<td>3250</td>
</tr>
<tr>
<td>Courses of the open science and leadership blended programme(^6)</td>
<td></td>
</tr>
<tr>
<td>Open Science (1 ECTS)</td>
<td>3250</td>
</tr>
<tr>
<td>Research Communication (2 ECTS)</td>
<td>6500</td>
</tr>
<tr>
<td>Research Grants: From the Idea to the Winning Project (2 ECTS)</td>
<td>6500</td>
</tr>
<tr>
<td>Leadership (1 ECTS)</td>
<td>3250</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>71500</strong></td>
</tr>
</tbody>
</table>

The funds per course will be transferred to the partner institution responsible for the course after its completion. We reserve the right to revise the estimated cost in order to align it better with each institutional costs for their implementation.

\(^5\) For common courses, we suggest a balanced no. of participants regarding, for example, gender, PhDs students, and other researchers.

\(^6\) For programme specific courses, we suggest a balanced no. of participants considering, for example, gender and institutional partners.
8 Implementation

Most of the courses proposed in ECIU SMART-ER Academy are already being organised by one or more institutional partners, which enables different partners to implement the courses. During November month, partners were inquiry about their availability to implement the ECIU SMART-ER Academy courses, enabling to propose a plan for implementation. This plan is created in collaboration with UAVR and provides information about which institutional partner(s) agree to deliver the course, the semester where the courses will be implemented, general information about the registration, certification, cancelation and data protection policy. UAVR will manage and coordinate the ECIU SMART-ER Academy implementation.

8.1 Timeline

The implementation of the ECIU SMART-ER Academy takes place during the year of 2022, where it is expected to run half in the spring and the other half in the fall. Nevertheless, the distribution of courses per semester considered the following criteria: 1) availability of the teachers and lecturers who will run the courses, 2) set up a new course (e.g. citizen science and public engagement, challenge-based research) or run an existing one. Table 7 provides an overview of the implementation time plan as well as the partners who will run which courses.

<table>
<thead>
<tr>
<th>Title</th>
<th>Expected workload (ECTS, &amp; hours)</th>
<th>Semester of implementation</th>
<th>Partner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citizen Science and Public Engagement</td>
<td>2 ECTS, or 60h</td>
<td>Fall 2022 (Sept. – Dec.)</td>
<td>UAB, in collaboration with KTU</td>
</tr>
<tr>
<td>Basic Principles of Challenge Based Learning (CBL)</td>
<td>2 ECTS, or 60h</td>
<td>Fall 2022 (Sept. – Dec.)</td>
<td>AAU</td>
</tr>
<tr>
<td>Introduction to Challenge Based Research (CBR)</td>
<td>1 ECTS, or 30h</td>
<td>Fall 2022 (Sept. – Dec.)</td>
<td>UT</td>
</tr>
<tr>
<td>Interdisciplinary Research</td>
<td>2 ECTS, or 60h</td>
<td>Fall 2022 (Sept. – Dec.)</td>
<td>AAU</td>
</tr>
<tr>
<td>Research Design and Excellence</td>
<td>3 ECTS, or 90h</td>
<td>Fall 2022 (Sept. – Dec.)</td>
<td>KTU</td>
</tr>
<tr>
<td>Research Ethics and Integrity</td>
<td>2 ECTS, or 60h</td>
<td>Spring 2022 (Feb. – May)</td>
<td>KTU, in collaboration with UAB</td>
</tr>
<tr>
<td>Project Management</td>
<td>2 ECTS, or 60h</td>
<td>Spring 2022 (Feb. – May)</td>
<td>AAU</td>
</tr>
<tr>
<td>Professional Communication</td>
<td>1 ECTS, or 30h</td>
<td>Fall 2022 (Sept. – Dec.)</td>
<td>AAU</td>
</tr>
<tr>
<td>Academic Writing</td>
<td>1 ECTS, or 30h</td>
<td>Spring 2022 (Feb. – May)</td>
<td>TAU</td>
</tr>
<tr>
<td>Open Science</td>
<td>1 ECTS, or 30h</td>
<td>Fall 2022 (Sept. – Dec.)</td>
<td>INSA, in collaboration with KTU</td>
</tr>
<tr>
<td>Research Communication</td>
<td>2 ECTS, or</td>
<td>Fall 2022</td>
<td>DCU</td>
</tr>
<tr>
<td>Title</td>
<td>Expected workload (ECTS, &amp; hours)</td>
<td>Semester of implementation</td>
<td>Partner</td>
</tr>
<tr>
<td>----------------------------------------------------</td>
<td>-----------------------------------</td>
<td>-----------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>programme</td>
<td>60h</td>
<td>(Sept. – Dec.)</td>
<td></td>
</tr>
<tr>
<td>Research Grants: From the Idea to the Winning Project</td>
<td>2 ECTS, or 60h</td>
<td>Fall 2022 (Sept. – Dec.)</td>
<td>UT</td>
</tr>
<tr>
<td>Leadership</td>
<td>1 ECTS, or 30h</td>
<td>Spring 2022 (Feb. – May)</td>
<td>DCU</td>
</tr>
</tbody>
</table>

The institutional partners who are responsible to implement the ECIU SMART-ER Academy courses are responsible for the digital platforms and tools, including the Learning Management Systems (hereafter LMS) such as Moodle.

ECIU SMART-ER Academy information should be announced at ECIU SMART-ER Researchers webpage (European Consortium of Innovative Universities (ECIU), n.d.) together with dates and detailed descriptions of the courses. It is expected to have this set up by February 1, 2022.

Any procedures regarding the quality assessment of the programmes, including data collection and management of the data collected, should be of responsibility of the UNITN (i.e. partner responsible for the evaluation of the ECIU-SMART-ER Academy implementation). The procedures should consider the criteria and key performance indicators (hereafter KPI) defined by the programme or the project.

### 8.2 Registration

Registration should open for individual courses and not for the entire programme. This will provide the participants the possibility to choose from the courses proposed the ones that suits best their interests and career plan. At least one month before a course starts (incl. self-study activities as preparation), an online registration form should be made available for researchers. The registration form should include, for example:

- Name of the researcher;
- Name of the institution;
- Position; and
- Contact email from the course organiser (lecturer and/ or administrative)
- Contact email from UAVR

It should also include additional information to the participants, namely a brief description of the course (incl. dates), cancelation policy, and data protection policy. The creation of the registration form is of responsibility of UAVR, partner who will overview the implementation process, and it will be available at ECIU SMART-ER Researchers webpage (European Consortium of Innovative Universities (ECIU), n.d.). Error! Reference source not found. provides a possible registration form.

Each course has a minimum and maximum no. of participants. We recommend a minimum of 10 and a maximum of 30 respectively; however, the course organisers reserve the right to adjust the minimum and maximum no. of participants here proposed. Upon registration, participants should receive an e-mail with following information:

- Confirm a successful registration;
- Inform when their participation will be confirmed;
- Cancelation and data protection policy
Additionally, the registration procedures should provide the opportunity to all ECIU researchers to register and participate in the ECIU SMART-ER Academy. Therefore, we propose that the maximum no. of participants balance representatives from all ECIU partners, gender balance and different stages of careers, and not use the “first come, first serve” as policy. This is particularly relevant in case of the no. registered participants exceeds the maximum no. of seats available for the course, it will enable to rank participants and balance participation across all ECIU partners. If a confirmed participant cancels its participation in the course, then his/her place will be offered to other participants obeying the participation balance above referred. Participants in waiting list should be notified of their participation in the course no later than a week before the course starts (incl. preparation period if applicable). It is advised to send a reminder email to all participants no later than a week before the course starts with the description of the course and other practicalities.

Registration is expected to open by February 1, 2022, where a link will be created by UAVR and made available in ECIU for Researcher webpage, under the ECIU SMART-ER Academy. UAVR has the responsibility to set up the link and manage the registration as well as the ranking process, including communication with participants and partners about confirmed and cancelled participations. After the registration period closes, no later than a week before the courses starts (incl. preparation period) UAVR will send the courses organisers the list of participants, incl. name, affiliation and contact email.

8.3 Certification
A certificate of participation will be given to participants that successfully complete the course. The minimum criteria to complete successfully the course should be determined by the course organisers. One good example of criteria is the participants’ active participation, namely attend all the activities that integrate the course, complete all the assignments required as part of the course, contribute actively to group and plenum discussions. The certificate should include relevant information, such as title of the course, date, brief description (incl. overall learning objective), workload (in ECTS and hours), name of the participant, name of trainer(s), and signature of director of ECIU University and the course teacher. ECIU SMART-ER Academy and the responsible institution for the course should issue the certificate. UAVR has the responsibility to manage the certification process as well.

8.4 Cancelation Policy
The cancelation policy is extended to the organiser and responsible for the course, and the participants. Organisers reserve the right to cancel it if, for example, the number of participants is below a minimum no. established (e.g. 10), or illness. Participants also reserve the right to cancel their participation; however, the cancelation should take place no later than 10 days the course commences and a short justification should be provided. To cancel their participation, participants should send an email to the contact provided by UAVR in the registration form.

8.5 Data Protection Policy
The registration requires the provision of personal data by the applicants, namely the name, title, affiliation, gender, career stage, contacts, and research interests. The personal data provided by the applicants will be kept on file by the Research Support Office of the University of Aveiro, headquartered at Campus de Santiago, 3810-193 Aveiro, Portugal, the responsible for processing it. This data collection aims to collect, rank and manage the participation of ECIU researchers in ECIU SMART-ER Academy as well as the impact assessment of its implementation due in the scope of the H2020 funding of the ECIU SMART-ER project. The conclusion of these activities will imply the
transfer of the collected data to the ECIU SMART-ER institutions involved in each of the activities and proposals and, upon request, to the European Commission. The operations for processing the personal data previously indicated are based on the pre-contractual relationship established supported by General Data Protection Regulation (hereafter GDPR), which consists of managing the received registrations of the eligible participants, contacting the researchers, course providers or host institutions about confirmed and cancelled participations, informing the management structure of the ECIU SMART-ER regarding the courses estimated costs and beneficiary institutions to support the transfer of the due funding amounts and to collect the necessary data to assess the impact of the programme and report to the European Commission. The data provided for the purposes indicated above will be kept for two years after the end of the ECIU SMART-ER project. By means of a written communication to be sent to the UAVR address indicated in the second paragraph above, unless any of the restrictions provided for in the applicable legislation apply, the researcher and subject data may exercise the rights of access to his/her personal data, as well as its rectification. Any request to erasure or limit the data processing in any stage of the process will be subject to a careful analysis and may imply to immediate closure of the process and or the reimbursement of received funds. For any additional information, clarification or request regarding the above paragraphs contact the Research Support Office of the University of Aveiro through the email account research@ua.pt. The UAVR has a Data Protection Officer (hereafter DPO), who ensures compliance of the treatment of personal data with current legislation, and can be contacted at the following email address: epd@ua.pt.
9 Bibliography


Acknowledgements

The SMART-ER project has received funding from the European Union’s Horizon 2020 research and innovation programme under Grant Agreement # 101016888. This result only reflects the author’s view and the EU is not responsible for any use that may be made of the information it contains.