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SUMMARY

The presented document aims to provide a comprehensive overview of the latest development and evolution of the 4EU+ Flagships in the monitored period November 2022 - October 2023. The portfolio is divided into chapters dedicated to each Flagship separately, each chapter follows very similar structure. After introducing the Flagship and its thematic focus, social relevance and goals, each Flagship shortly summarizes its governance, organizational structure and changes that have occurred in the past year. This is followed by outlining the strategy of facilitating student engagement, involving the external partners or other stakeholders, in general, describing how the Flagship community is being built. Flagship development covers topics as sustainability of already existing activities, as well as consideration of new initiatives and impetus. In separate sections, Flagships focus on their research and educational aspects, also by showcasing a range of examples and activities that take place on the way towards sustainable learning pathways, joint degree programmes and beneficial educational offer, and that also unlock the research potential.

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Abbreviations of individual universities:

Charles University (CU)

Heidelberg University (UHD)

Sorbonne University (SU)

University of Copenhagen (UCPH)

University of Geneva (UniGe)

University of Milan (UniMi)

University of Warsaw (UW)

INTRODUCTION

Four 4EU+ Flagships continue to be pillars of the 4EU+ Alliance, structuring its educational initiatives and contributing to the development of research collaborations.

Who are the Flagships? What impact do they have on the development of education, research and the third-role mission within the 4EU+ Alliance? How are the Flagships organized and led? In what ways do they involve students and PhD candidates? What does the collaboration with the business sector and other external partners look like?

Flagships are an integral component of the Alliance structure; therefore, this portfolio takes a comprehensive approach to the Flagships' activities and their development. Therefore, it does not only include activities related to the iCORE project; on the contrary, the broader context provides an opportunity to examine the impact related to the entire Alliance structures and schemes (e.g., SEED4EU+, Visiting Professorship or mini-grants).

Let's delve into an overview of how Flagships are formed and developed, how their communities grow, what they offer in the field of education, and how they contribute to the development of research within the Alliance. In the following four chapters dedicated to individual Flagships, we will examine their main initiatives and activities over the past year, the first year of the iCORE project (November 2022 – October 2023).

To provide a comprehensive introduction, we present a short recapitulation of the activities in which all four Flagships participated at the same time.

Continuing Education Development

In February 2023, the final decision was made by the 4EU+ Governing Board to financially support the continuation of educational projects which have originally started during Erasmus+ European Universities project. Projects that expressed enthusiasm to continue and received positive assessments from the educational experts and the Flagships were motivated and supported on the path toward further development and self-sustainability.

The portfolio of projects linked to the Flagships thus consists of educational projects, mini-grants and now also SEED4EU+ projects.

The educational offer is complemented by the offer of shared courses. These may also have an affiliation to individual Flagships. An overview of these courses is provided in the appendix.

#GrowingTogether

The two significant initiatives, SEED4EU+ and 4EU+ Visiting Professorships, have engaged 4EU+ Flagships, albeit in slightly different ways. Both calls, launched to stimulate collaborative research and educational activities and promote out-of-the box projects, received substantial response from academics and researchers across the 4EU+ member universities.

The SEED4EU+ call received 42 applications from teams involving altogether more than 400 academics and students. Out of these, 17 projects have been selected for funding. Over half of the applications involve more than three 4EU+ member universities. The funding of this

initiative comes from the budgets of 4EU+ member universities. A number of these projects fall under one of the Flagships and will thus enrich the reach of the Flagships and help build the Flagships' community.

Under the 4EU+ Visiting Professorships initiative, 9 candidates were selected from among 22 applications. The Flagships representatives have been involved in the evaluation process and thus contributed to the selection of successful candidates who will undertake joint educational and research activities during the stay of two to three months at another 4EU+ university. They will contribute to the development of new educational frameworks and areas of expertise, promoting the exchange of skills across our universities.

International Geneva: Developing collaborations between 4EU+ and International Organisations

In April 2023, the University of Geneva invited all four Flagships' representatives to meet with International Organizations based in Geneva. This was an opportunity to share best practices on collaboration between universities and international organisations. The workshop gathered, on one side, representatives of the 4EU+ member universities, and on the other side, representatives of the Geneva Science Policy Interface, SDG Solution Space and the SDG Summer School, WHO/Geneva Digital Health Hub, UN Economic Commission for Europe (UNECE), International Telecommunication Union (ITU) and UNEP-GRID. The purpose of the event was to discuss collaboration with the academic world, and how to effectively integrate academic partners and International Organisations into the daily work, as well as to develop collaboration between 4EU+ and International Organizations.

SDG Summer School: 4EU+ scholarships

As an immediate response to the International Geneva workshop, places were opened for 4EU+ students to attend the SDG summer school supported by a scholarship. Two scholarships were provided by the 4EU+ European University Alliance association and arranged by the 4EU+ General Secretariat and two by Sorbonne University. Flagships played a major role in identifying the most suitable candidates and enabling 4EU+ students to take advantage of this great opportunity to join the SDG Summer School, which this year focused on Open-Source Health Solution. For highlights of SDG Summer School 2023, you can watch the video here: <https://www.youtube.com/watch?v=tnCQc2rRsUY>.

Studying European-style: 4EU+ Student Night at Heidelberg University

In May 2023, Heidelberg University held the first hybrid "Student Night" in the context of the 4EU+ European University Alliance. The event was also livestreamed to the 4EU+ member universities in Prague, Paris, Copenhagen, Geneva, Milan and Warsaw. The event was addressed to Bachelor and Master students and doctoral candidates in all subjects and disciplines. The focus was on the range of courses and the numerous opportunities for exchange within the university Alliance.

The main objective of the 4EU+ Student Night was to give information about the courses offered in the context of the four interdisciplinary Flagships, as well as the university-wide course offerings and funding opportunities for students and doctoral candidates. Furthermore, students from the member universities reported on their experiences. All four Flagships representatives participated in the final conversation.

Forum of good practices: skills and competencies in 4EU+

In June 2023, the 4EU+ Education Days were organised as part of the NAWA-funded “4EU+ for Ukraine” project. The event took place on-site at the University of Warsaw and online.

The programme of the 4EU+ Education Days included various workshops and training sessions. They covered topics such as strategies for digital teaching and learning, the European Degree label project, Erasmus Mundus Design Measures and Erasmus Mundus Joint Masters, joint studies accreditation in EHEA and the 4EU+ Quality Management System. The forum for sharing good practices has also been opened.

4EU+ defined a joint 4EU+ Graduate Skills, Competencies and Values portfolio, which corresponds to the profile of a 4EU+ graduate and stresses five shared competencies. But how is this concept being translated into practice? All four Flagships, also representing seven 4EU+ member universities, shared their success stories and experiences with the broader 4EU+ community”, as well as with partners from three universities from Ukraine.

Budget for 2023

4EU+ Alliance is currently developing a strategy for years 2025-2035, in which the efforts of all Flagships are being reflected. The Flagships’ considerations of new long-term visions and developments at the level of the Alliance’s general strategic network are needed. The role of Flagships in building one comprehensive European University will be better articulated, focusing on the conceptual framework, organisational and institutional mechanisms, and financial support for the sustainability of already developed and functioning 4EU+ educational activities.

The effort of all Flagships was also partly reflected in the provision of financial support. A budget of EUR 25,000 for 2023 was provided by the 4EU+ Association to each of four Flagship.

FLAGSHIP 1 URBAN HEALTH AND DEMOGRAPHIC CHANGE

Introduction: thematic focus, social relevance, education and research

Flagship 1 *Urban Health and Demographic Change* addresses the mutually interrelated issues of health and well-being, demographic change and urban transformation. These areas and especially their overlaps are among the major societal challenges of our time, that are emphasised in the mission statements, political agendas and activities of the United Nations, the European Union and national governments. The key challenges in the field of urban health and well-being are associated with modern civilization, particularly with lifestyle changes, shifts in dietary habits, exposure to new chemicals, and the overall increase in life expectancy and population ageing. Furthermore, they are conditioned by the living-environments, including housing and transport quality and affordability, access to healthcare and education and quality of green spaces. Addressing these health-related issues requires a comprehensive approach that combines preventive measures, accessible healthcare services, health education, and the development of infrastructures and environments that support healthy lifestyles. Therefore, it is essential to prioritize public health and well-being in urban planning and decision-making processes, ensuring that cities are equipped to respond effectively to health challenges, including both chronic diseases and infectious outbreaks, through sustainable and resilient solutions.

An interdisciplinary and international community of researchers from various medical and social science disciplines has been formed to cooperate on issues such as physiology, cancer, psychology, global health studies, urban studies, demography, human geography and economics, all related to Flagship 1 thematic challenges. Since 2020, the educational activities developed within Flagship 1 address diverse topics from Flagship's thematic fields. These educational activities form the cornerstone of the Flagship's educational pathways, emphasizing the 4EU+ shared values and competences (critical thinking, social engagement, data literacy, entrepreneurship, multilingualism). They also use 4EU+ promoted innovative pedagogies, such as the ABC LD method (Activity Based Curriculum Learning Design) with emphasis on learning outcomes and active learning through acquisition, inquiry/investigation, discussion, collaboration, practice and production.

In addition, the portfolio of learning activities has significantly expanded since 2022 with the introduction of virtual mobility courses, i.e., online courses offered by any Alliance member university that are open for enrolment by students from other universities. New innovative ideas and developments in research and education have been supported through specific format of mini-grants provided by CU and UW. In 2023, the SEED4EU+ programme was launched to support the development of innovative education and research projects.

Flagship governance and community building

Flagship 1 is jointly coordinated by three Flagship leaders (academic coordinators) from three different universities: Charles University (Prof. Luděk Sýkora), University of Heidelberg (Prof. Ulrike Gerhard) and University of Milano (Prof. Antonella Delle Fave). Two Flagship assistants from Charles University (Julie Hubeňáková, Ph.D.) and University of Heidelberg (Dr. Editha

Marquardt) support the work of the academic coordinators. Strategic issues are discussed within the Flagship 1 programme committee consisting of 12 members (including Flagship leaders), with two representatives from each 4EU+ university. For the time being, the University of Copenhagen is not represented in the Flagship 1 programme committee.

Leading the Flagship

The three Flagship leaders and assistants meet regularly, through online calls scheduled once in a month, as well as in additional occasions when needed. They communicate by email and use shared documents (MS Teams, SharePoint). All leaders and assistants participate in various 4EU+ meetings and exchange the knowledge gained in these meetings. This includes the iCORE Kick-off Meeting in Prague (14 November 2022, Luděk Sýkora, Editha Marquardt, Julie Hubeňáková) and the 4EU+ Meeting in Geneva (18-19 April 2023, Antonella Delle Fave, Luděk Sýkora, Julie Hubeňáková). The FS1 coordination team and the FPC also met at the Annual Meeting in Copenhagen in 2022 (28 October 2022). In addition, the leaders and assistants take part in online workshops and meetings. Here, the WP3 meetings are to be mentioned (29 March 2023, 16 June 2023, 18 September 2023), the meetings with the General Secretariat (e.g., 13 February 2023) as well as meetings on the student portal (31 January 2023) and the workshop on IT and groupware solutions (21-23 June in Warsaw) or the workshop provided by the Working Groups Education and Mobility (13 June 2023). They get involved in additional 4EU+ activities, e.g., reviewing applications under the 4EU+ Visiting Professorship call.

During the last year (November 2022 – October 2023), the general focus of Flagship management was on several issues. First was the discussion and articulation of Flagships' position within the 4EU+ Alliance, with an emphasis on the need to formulate long-term strategy, enhance internal and external communication, and assure sustainability of existing educational projects. Second was the discussion and development of approaches to fulfil the objectives of the iCORE project. Third was the articulation of new 4EU+ initiatives (such as SEED4EU+) for the Flagship community and its needs. Forth, and very important, was keeping the strong network between researchers from all partner universities that has been established around Flagship educational projects and other initiatives.

On the strategic level, Flagship 1 has identified a need for better integration of the two components of the Flagship – healthcare and urban studies – within both educational and research initiatives. Considering that the UN Sustainable Development Goals and the concept of One Health call for a stronger interdisciplinary effort to address the current global issues, this aim is both challenging and highly needed. The agenda of strengthening Flagship 1 internal collaboration is necessary to design curricula that can provide students of the future European University with the knowledge and competences suited to adequately face and solve the increasingly complex societal and environmental demands.

Building the community

Flagship 1 educational and research activities are driven by a committed international community of scholars from various fields of medical and social science disciplines. The community is an informal group that currently consists of about 80 engaged academics from all member universities, namely teachers and researchers experienced with 4EU+ educational projects and mini-grants, but also including academicians from the broader community who are interested in the Flagship's topics and 4EU+ cooperation. Regular quarterly Flagship 1 community meetings are organised to share updates and information about 4EU+ initiatives,

calls, and new activities. Additionally, this forum serves for exchanging, sharing, and networking opportunities, while also providing support as contact persons to facilitate networking among members.

Table 1: Overview of the Flagship 1 Programme Committee and Community meetings

28.10.2022	FS 1 PC Meeting in Copenhagen, Annual Meeting	14 participants
13.01.2023	FS 1 Community Meeting	28 participants, 7 universities
21.04.2023	Meeting PC FS1 FS 1 Community Meeting	18 participants, 6 universities
10.07.2023	FS 1 PC + Community Meeting	22 participants, 6 universities

At the level of individual Alliance member universities, meetings are organised between Flagships and coordinators from local 4EU+ offices to enhance mutual coordination, exchange experiences, and learn about both good practices as well as obstacles and shortcomings.

Involving the students

Within Flagship 1, there are no specific measures to include students or PhD candidates in coordination activities. The Flagship management is convinced that the main goal of the Flagship is to provide and support educational and research activities within which students and PhD candidates from 4EU+ universities can learn, meet and cooperate¹. In association with the application of the ABC LD method in 4EU+ courses, students are involved not only in providing ex post feedback, but they also actively shape the design of courses and other educational activities. Furthermore, as there are student-centred initiatives on the 4EU+ level, students participate in both management and social activities, leading to cross-fertilisation among Flagships and other 4EU+ activities².

¹ For instance, summer schools offer great opportunity for networking. The summer school “4EU+Against Cancer” held in July 2023 in Mariánské Lázně brought together researchers, teachers and students.

² After the last 4EU+ Student Night, which took place in Heidelberg, a new student group emerged at Heidelberg University. Representatives from Flagship 1 supported the students’ engagement and one of our students (Ira Borgstedt) is now member of the new group.



Picture 1: 4EU+ Student Night



Picture 2: 4EU+ Student Night

Cooperating with external partners

Besides the 4EU+ universities, scholars/teachers and students from other partner universities, as well as associated or external partners from non-academic organizations, are involved in educational activities. The traditional activity “Urban Health Case Challenges” entails cooperation with external academic and non-academic entities, for example municipalities. The 2023 edition of Urban Health Case Challenge is under preparation. It will take place in Warsaw and involve the World Health Organisation (WHO) and cooperation with the 4th International Scientific Conference on Interdisciplinarity of Health and Healthcare. The 4EU+ course “Resilient Cities” involves partners in the final workshops. In 2023, the workshop held in Paris was anchored by the facilities of the Cité Internationale Universitaire de Paris (Francesco Torrici) and involved several external partners, which contributed to the study field visits, including Paris Batignolles Aménagement (architect Nikola Meyer and Eric L’Helguen, smart city specialist), ZAC du Fort d’Aubervilliers (Loukia Peneau), and Grand Paris Aménagement

(Mathilde Lacroix and Raphaël Bernard). The development of the European Master's programme in epilepsy that fosters a multi-disciplinary approach to epilepsy research and epilepsy education cooperates with University of Erlangen, the Royal College of Surgeons of Ireland, UCL, and other universities beyond the 4EU+ Alliance members. The project on "Building a network of student-led teaching of medical ultrasound" cooperates with the University of Cambridge. Guest lecturers are involved in several educational offerings. Specifically, the course "Smart Cities for Ageing Societies" was organised as a series of guest lectures. Also, members of industry or SMEs participate in our educational and research activities.

Flagship's development: sustainability and new initiatives

The role of Flagships and the development potential of Flagship initiatives are largely determined by the general framework set at the level of the 4EU+ Alliance. In the past year, it was mostly driven by the objectives of the iCORE project (2022-2026), the need to sustain educational activities developed within previous period with the support of the European Universities Project (2019-2022), specific programmes designed within the 4EU+ Alliance to support new and innovative research and educational projects (SEED4EU+, 4EU+ Visiting Professorships) or provided by some Alliance member universities, such as Charles University mini-grants.

Budget for 2023

Flagship 1 launched an open call to all the community members, soliciting the submission of projects and new initiatives addressing key issues of new development and innovation. The Flagship representatives received and accepted two project applications and agreed to support both of them.

Pilot phase of the "Compatibility of Curricula Initiative in Geography" (Fall Semester 2023/24) involved five universities: UHD, SU, UCPH, UniMi, and UW. As not all universities have the possibility to support their students' mobilities during the pilot phase, the Flagship budget allows for additional funding opportunities for short-term mobilities at three of the participating universities (UniMi, SU, UW). The activity starts in September 2023.

A two-day workshop inviting all members of the Flagship 1 community will take place in Prague in January 2024. The main idea of the workshop is the thematic pathway. The workshop is aimed at promoting exchanges, coordination, networking, negotiations, and further development within several Flagship 1 areas and priorities:

- Educational/Learning Pathways;
- Joint (Master) Study Programmes;
- Innovative and Challenge Based Educational Activities (Research Based Education);
- Cooperation of PhD Candidates and Researchers;
- Compatibility of Curricula.

New impetus for the development

In an effort to stimulate new innovative collaborations, the 4EU+ Alliance launched two schemes in 2023 that provided seed money: SEED4EU+ call for research and education and the Visiting Professorships. While these calls were not coordinated with Flagships leadership, project application had to be associated with Flagships. Consequently, based on the thematic

association the funded projects are becoming part of Flagship thematic area. They can bring new impetus for the development as well as challenges how to integrate and coordinate a pool of rather diverse activities.

Out of the 17 projects selected for SEED4EU+ funding, five projects are affiliated to Flagship 1 themes. Two projects deal with medicine and healthcare topics, one with questions of health and migration, and the other two with urban studies. Some projects were submitted by existing members of Flagship 1 and thus benefit from and extend the previous collaboration among partner universities, established during the first phase of the 4EU+ Alliance activities.

The **DETERMINANT** project aims to ensure the long-term sustainability of the 4EU+PharmacoEpi programme, launched during the previous phase of the 4EU+ Alliance activities, by establishing a Joint Master's Programme in pharmacoepidemiology and pharmacovigilance involving all partner universities, as well as associated partners. To achieve this goal, an application to the Erasmus Mundus Joint Master's programme will be submitted in either 2025 or 2026, with support from an application to the Erasmus Mundus Design Measures call in February 2024.

The **NECTAR** project brings together neuroglia and epilepsy specialists to investigate the role of glial cells in brain diseases, particularly epilepsy. The main goals of the project are (a) to establish a consortium including experts for different disciplines to explore the mechanisms of brain diseases; (b) to collectively address crucial unanswered questions in epilepsy research; (c) to submit competitive grant proposals to major international funding agencies such as Horizon and ERC Synergy, thereby securing long-term sustainability of the project and research advancements on neurological disorders.

The **MIHE** project aims to develop a MOOC on migration, health and equity. The course bundles expertise from all universities. It targets not only students and researchers but also policymakers and professionals providing new knowledge within this important societal field.

The **UNREAD+** project builds upon the already established collaboration between four partner universities (UW, CU, UNiMi and SU) Its primary objective is to advance knowledge in the field of spatio-temporal aspects of urban development. This initiative includes both teaching and research activities, as well as the strengthening of organisational and administrative collaboration. Furthermore, it aims to broaden the consortium by involving academics from other faculties and engaging social stakeholders and policymakers.

The **ICRR** project aims to design an interdisciplinary challenge-based research and Joint Study Programme on urban health and climate change (ICRR), building upon existing programmes in partner universities, such as 4Cities, Intersect, MobiliSense, H3Sensing, and PartiCitaE. A highly diverse group of researchers will address various aspects of the urban environment, co-creating an innovative education programme that provides competencies in areas such as data literacy, mobility and infrastructure, homes and housing, anticipation and prevention, social and environmental epidemiology, citizen science projects, climate change, and urban dystopias and utopias.

As for Visiting Professorships, out of the 9 proposals selected for funding, two are affiliated to the Flagship 1 community. The first one involves a scholar in Urban Studies from UCPH, who will be visiting UniGe. The collaboration topic is the increase of inequalities due to the COVID-19 pandemic, especially in urban contexts. The goal is to unify intersectional research methods

from both the humanities and data sciences to study the effects of the COVID-19 pandemic on cities. The second programme involves a collaboration between CU and UNIMI in the field of medical biochemistry and laboratory diagnostics, with the aim of advancing knowledge about cardiometabolic diseases, which are dramatically increasing in Europe and worldwide. Activities will include lectures, seminars, joint publications, the establishment of an inter-university centre dedicated to the study of biomarkers of organ diseases, and the development of educational programmes on this topic.

Research: seed funding as an opportunity

Flagship 1 community has benefited from several research mini-grants, in both urban studies and medicine. In the medical field, the funded projects show a remarkable convergence in topics with the educational activities developed in the first phase of the 4EU+ collaboration (described in the following section), as well as with the projects selected through the SEED4EU+ and Visiting Professorship (described in the previous section). This convergence is a major asset for ensuring the long-term sustainability of all the Flagship initiatives, their development into university courses, and their contribution to the global health and societal challenges posed by chronic and progressive diseases. In the field of urban studies, the 4EU+ Master in Urban Studies aims to explore possibilities and potentials to develop joined master's programme and provide its first outline. The effort focuses on the thematic division of urban studies fields between partners, composition of lectures/seminars, time schedule in relation to the compatibility of curricula, definition, scheduling and time allocation for core study activities, development and use of plug-in modules, and the options for the study programme's final accomplishment. This effort contributes to 1CORE WP3: 4EU+ Flagships: research-based education and specifically T3.2: Towards 4EU+ joint study programs.

Table 2: List of Flagship 1 mini-grants (2023)

Project Title	Participating 4EU+ Universities
4EU+ BLOOD-GAS: Education and Research Joint Initiative in Acid-Base Physiology and Homeostasis	CU, UCPH, UniMi
Emerging new concepts and approaches to target diabetes pandemic in urban areas: from physiology to successful implementation	CU, SU, UCPH, UniMi
The programming power of the placenta: A short-lived organ with a long-lasting impact on global health	CU, UCPH, UniGe
Dual Antiplatelet Therapy For Shock Patients With Acute Myocardial Infarction - DAPT-SHOCK-AMI study	CU, UHD, SU, UW
4EU+ Master in Urban Studies	CU, UHD, SU
Visual teaching in challenging themes for teacher practice	CU, SU, UW

Examples of news and developments in the past period

The programming power of the placenta: A short-lived organ with a long-lasting impact on global health

The project team is currently arranging mobilities between the team and other members from the University of Geneva and the University of Copenhagen. One mobility successfully took place in April 2023 when Prof. Marie Cohen (University of Geneva) visited Hradec Kralove and gave a lecture on her past and current research activities entitled “Ovarian cancer progression and placentation: Parallels in the modulation of cell fusion”. Approximately 10 PhD students attended the event and gained insights into ovarian cancer progression and placentation. Placental cells, although not malignant, share with cancer cells many molecular mechanisms involved in invasion, cell fusion, or tolerance to the immune system. This lecture raised an interesting discussion afterward on collaboration between the teams both in method exchange and mutual projects.

In addition, the principal investigator attended the European Placenta Perfusion Workshop in Graz, Austria, which was a fruitful meeting with an inspiring programme. It provided a unique opportunity to meet with associated and external partners in the field of placental biology.

4EU+ Prague Summer Scientific Symposium

Emerging new concepts and approaches to target diabetes pandemic in urban areas: from physiology to successful implementation

The 4EU+ Prague Summer Scientific Symposium, held on 15-17 June 2023 in Karolinum, brought together researchers from several 4EU+ universities to discuss new concepts and approaches to target diabetes pandemic in urban areas.



Picture 3: The 4EU+ Prague Summer Scientific Symposium

"The 4EU+ Prague Summer Scientific Symposium was much more than a conference. It was a place where scientists from all over Europe came together to share ideas and learn from each other. The event was a great opportunity for everyone to build connections, start new collaborations, and lay the groundwork for an ongoing scientific platform within the 4EU+ Alliance. The enthusiasm for the possibilities ahead made the symposium a resounding success. We hope to continue this in other cities, such as Copenhagen," says Jan Gojda, main organizer of the event.



Picture 4: The 4EU+ Prague Summer Scientific Symposium

Some activities and initiatives create and test innovative approaches and tools, enriching the university environment. Many of them continue to develop and advance, using other possibilities and financial schemes outside the 4EU+. In the Flagship 1, the project team of "The development of the European Master's program in epilepsy; A multi-disciplinary approach to epilepsy research and epilepsy education" have unsuccessfully applied for Doctoral Networks -

Marie Skłodowska-Curie Actions. The team intends to resubmit the project. Similarly, "4EU+ BLOOD-GAS: Education and Research Joint Initiative in Acid-Base Physiology and Homeostasis" also made an unsuccessful application for the external EU funds and plans to resubmit. Several Flagship 1 projects applied for SEED4EU+ to create consortia with the capacity to apply for major European funding.

Education: from educational projects towards study programs

Within the thematic scope of the Flagship 1, the offer of educational projects focuses on diverse issues such as physiology, cancer, psychology, global health studies, urban studies, demography, geography or economics. In Flagship 1, the educational offer has not been guided by an intention to develop a complex and comprehensive educational pathway. Instead, the focus has been on developing individual education elements, namely courses, seminars and summer schools that could be elected by students from their existing study programmes. These new and innovative educational activities are intended to be incorporated as regular parts of existing study programs at the respective partner universities. Through such a bottom-up approach, the 4EU+ educational activities that address key social challenges in the areas of health and demographic change in an urban environment are integrated into existing teaching and learning processes as part of curricula.

The key objective of Flagship 1 is to contribute to educational pathways that offer high-quality, research-based education, while fostering shared values, skills and competences, and open opportunities for such learning pathways that allow for flexible choices from diverse high-quality educational activities. The teaching and learning employ innovative pedagogies with the emphasis on high quality research-based education, student-centred and student-driven inclusive education, critical thinking, social engagement, creativity and entrepreneurialism, data literacy and attention to multiculturalism and multilingualism. Innovative organizational and technical solutions support on-site and on-line teaching and learning and related virtual and physical mobility.

In the past year, the major effort of all Flagship coordinators was to assure financial support for the sustainability of educational activities that has been finally provided by individual member universities for 2023. Updated, enlarged and new educational activities received support from SEED4EU+ and 4EU+ Visiting Professorships schemes. Their integration into the existing Flagship community is an important challenge for forthcoming period.

With the missing 4EU+ strategic framework that would define the role of Flagships and provide institutional setting for long-term sustainability of educational activities and development of learning pathways, the actual educational offering is provided in the form of individual educational projects that pilot, test and practice cooperation between 4EU+ Alliance member universities. The major and forthcoming challenge associated with the iCORE project is the development of joined master study programmes and co-operations in doctoral studies.

Table 3: List of Flagship 1 Educational Projects

Project title	Participating universities
The development of the European Master's program in epilepsy	SU, UNIMI, UW, CU (leader)
Resilient Cities: challenges, risks and response	UHD, SU, CU (leader)
Perineal Trauma Prevention, Evaluation, Education, Repair and Scanning Blended Learning (PEERS+)	SU, UNIMI, UHD, CU (leader)
Comprehensive and integrative educational program in oncology	UW, SU (leader), CU
4EU+ Urban Health Case Challenge	CU, SU, UM, UW, UCPH, UHD
Development of an integrated 4EU+ Pharmacoepidemiology educational program	UCPH, UNIMI, SU (leader), CU
Urban Regulations and Political Memory: Towards understanding Spatio-Temporal aspects of Urban Development	CU, UNIMI, UW (leader)
Building a network of student-led teaching of medical ultrasound	CU, UNIMI, UHD (leader)
Understanding and Supporting Caregiver-Child Interactions	UW, UHD (leader), UCPH, UNIMI
Course: Designing, implementing, & analyzing online questionnaires on career development during the COVID-19 pandemic	UHD (leader), SU, UNIMI

Examples of various educational activities in the past period

The development of the [European Master's program in epilepsy](#) has benefited from 4EU+ support through educational projects and minigrants. During the projects, we set up the International Online Course on the Pathogenesis of Epilepsy. Approximately 80 participants and undergraduate students from Charles University and the University of Milano participated in the project. We have established a 4EU+ epilepsy consortium that includes partners from other European universities, research institutes, and members from the industry. We unsuccessfully applied to MSCA for the European Ph.D. training program in epilepsy research. We will resubmit the project again this year. We have applied for SEED4EU+ to create a 4EU+ Neuro-glial consortium that will have the capacity (together with the epilepsy consortium) to apply for major European funding. Our long-term plan is to maintain and expand the course to a micro-credential. We plan to set up a European Ph.D. training program. As a final step, we will explore the possibilities of a Master's program. Here, we would like to obtain the experience of colleagues within 4EU+ Alliance who applied for Erasmus Mundus to set up a similar type of Master's program.

Initiatives by the 4EU+ Alliance at the 35th Annual International Epilepsy Congress (IEC)

Members of the 4EU+ Epilepsy Consortium and faculty members of the 4EU+ International Course on the Pathogenesis of Epilepsy organized and participated in two teaching sessions at the International Epilepsy Congress that was held this year in Dublin, Ireland, 2-6 September

2023. The speakers were internationally recognized experts from various fields of experimental, clinical, and translational epilepsy research who were brought together during the successful 4EU+ educative and research projects led by the Second Faculty of Medicine, Charles University.

The IEC teaching sessions focused on the role of animal epilepsy models and electroencephalography in current and future epilepsy research. During the preparation of the sessions, organizers put emphasis on the highly didactic nature of the lectures and case studies so that learning objectives could reach experts and non-experts interested in these crucial aspects of epilepsy research. The sessions were endorsed by the International League Against Epilepsy and Young Epilepsy Section. Overall, both sessions were very well attended. The session organizers were also approached by the editors of the international epilepsy journal with the invitation to prepare a review article on these scientifically highly relevant topics.



Picture 5: 4EU+ at the 35th International Epilepsy Congress

Resilient cities educational project took place for the third time between the three universities: SU, UHD and CU. As in the two previous years, the course was organized with ten weekly online sessions between February and May 2023, involving ten students from each of the three universities. During this period, students prepared discussions, presentations and written exams to design and prepare the classes. In June, a three-day workshop in Paris followed, during which the participants visited different neighbourhoods of sustainable urban development, supported by local partners and experts. The field visits provided challenging case studies to understand the growth of resilient cities. Consequently, the class could address urban theory, as well as applied urban geography and planning. The organisational and travel costs were funded by the participating member universities of the 4EU+ Alliance.



Picture 6: Resilient Cities 2023



Picture 7: Resilient Cities 2023

The 4EU+ PharmacoEpi project **was funded in 2021** to enhance students' knowledge of fundamentals methods in pharmacoepidemiology and provide an understanding of the structure of the French administrative health databases, the Danish registries, and the Italian National Health Service databases, in order to develop multi-country research project in pharmacoepidemiology within the 4EU+ Alliance. The first course session was organised in March 2022 with a blended format, consisting of a 10-day online course [40 hours] followed by a short-term mobility of 3 days at Sorbonne University, Paris. The course was highly successful, with 29 students from 5 universities of the 4EU+ Alliance attending the course (62 applications submitted), and it received very positive feedback from students (91% of students would recommend the course to others). The course has been renewed this year and extended to two formats to accommodate students' varying levels of knowledge (Beginner / Advanced). One course occurs in Copenhagen and the other one in Paris. The first session (Advanced Course) was held in Paris in May and June 2023, with 19 students from 5 universities participating. The second session (Beginner Course) is scheduled for November 2023 in Copenhagen.



Picture 8: 4EU+ PharmacoEpi

The project on “**Building a network of student-led teaching of medical ultrasound**” successfully organised two summer schools of anatomy-based sonography at Heidelberg, SASH, in 2021 and 2022. Each year, we instructed 20 students from 4EU+ and other universities in the theoretical background of abdominal ultrasound, followed by daily hands-on practice sessions. Our tutors taught small groups of five participants using state-of-the-art ultrasound devices that allowed participants to recognize organs at high resolution. As many participants had never seen abdominal organs with such clarity before, these scanning sessions left a lasting impression on them, as they told us in written feedback, and led them to improve their ultrasound proficiencies even after they returned to their home institutions. All participants completed SASH by taking a mini-OSCE (objective structured clinical examination), a widespread type of assessment in clinical medicine. Without exception, students demonstrated their proficiency in performing accurate abdominal ultrasounds on their peers. Having acquired this fundamental practical medical skill in just one week is an excellent achievement for relatively inexperienced medical students. An impressive network was developed including cooperation with the Institutes of Anatomy at the Universities of Prague and Milano. The team aims to establish SASH satellite curricula at both institutions to build a network of student-led teaching of medical ultrasound. For that, prospective ultrasound tutors were invited to Heidelberg to be trained in the instruction of their respective local students. These first-generation tutors can be the starting point for training further tutors in Prague and Milan.



Picture 9: Building a network of student-led teaching of medical ultrasound



Picture 10: Building a network of student-led teaching of medical ultrasound

On 2-5 July 2023, the highly anticipated [Summer School "4EU+ Against Cancer"](#) took place in the picturesque setting of Mariánské Lázně in the Czech Republic. Led by esteemed academics from Charles University, Masaryk University, Sorbonne University, and the University of Warsaw, this event brought together aspiring researchers and experts in the field of oncology. The National Institute for Cancer Research (NICR) contributed a team of esteemed scientists, including Prof. Aleksi Šedo from Charles University, Prof. Ahmed Idhahbi from Sorbonne University, and Dr. Catherine Suski-Grabowski from the University of Warsaw, who expertly prepared and led the school programme, many of whom also actively engaged in the event. The objective of this collaborative effort between the 4EU+ Alliance and NICR was to foster a fruitful

exchange of knowledge and experiences among participants, with plans already in motion to continue this partnership in 2024 at Sorbonne University.



Picture 11: [4EU+ Against Cancer Summer School](#)

4EU+ UNREAD project successfully finalises its second edition

The final conference of the 4EU+ course “Urban Regulations and Political Memory” was held in Prague at the Faculty of Science of Charles University on 23 and 24 March 2023.

The 4EU+ course „Urban Regulations and Political Memory: Towards understanding Spatio-Temporal aspects of Urban Development” (UNREAD) was supported as one of the educational projects developed under Flagship 1 of the 4EU+ Alliance. A team of historians, lawyers and geographers from the University of Warsaw, the University of Milan, and Charles University conducts this interdisciplinary course. The first edition started in October 2021 and was finalised in March 2022, while the second edition began in October 2022 and was completed in March 2023. The topics of this course are driving forces of urban changes, the development of smart cities and interdisciplinary methodologies of urban studies applied to cases in Czechia, Poland and Italy.



Picture 12: 4EU+ UNREAD: Urban Regulations and Political Memory

Compatibility of Curricula in Geography and Geoscience

In Flagship 1, an important project to develop new educational pathways is the Compatibility of Curricula process in Geography and Geosciences. It aims at creating new mobility possibilities for students in these disciplines. By offering short-term mobilities lasting 2-3 months, the programme develops innovative pathways in addition to the regular ERASMUS offer, addressing the evolving needs of students. To achieve this, an extensive process was initiated in 2021, involving colleagues from all 4EU+ universities. The process included several workshops in presence and virtually, which allowed to generate an overview of the different MA programmes. From that, a joint offer of 13 modules was created. All courses are accepted by the involved universities. A pilot phase will be realised during the academic year 2023/24 involving five 4EU+ universities. Following that, an evaluation phase is planned. Another future task is to involve the University of Geneva, new member of the 4EU+Alliance.

Longer-term perspective

Longer-term perspective has to be taken into consideration, a range of activities is in the preparatory phase, leading towards micro-credentials, (plug-in) modules, joint study programmes, etc. Following initiatives could be mentioned in this regard:

- The Compatibility of Curricula in Geography is working towards the development of Plug-In modules. After the pilot phase, these modules can be integrated into the universities' existing study programmes.
- At the University of Milan, as part of the 4EU+ educational activities, a set of training tracks in various clinical areas was designed and included in the curriculum of the Medical School, as a micro-credentials offer to 6th year students. This opportunity will be available to students from all the member universities; to this purpose, a collaboration has been developed with Charles University.

Within the Flagship 1, three educational projects aim to develop joint study programmes:

- Epilepsy - A multi-disciplinary approach to epilepsy research and epilepsy education

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- 4EU+Against Cancer
 - 4EU+PharmacoEpi: an integrated 4EU+ Pharmacoepidemiology educational course

FLAGSHIP 2 EUROPEANNESS: MULTILINGUALISM, PLURALITIES, CITIZENSHIP

Introduction

Europeanness as the main theme of Flagship 2 encompasses the manifold aspects of Europe and being European seen as an elaborate human-made construct of integrative potential. It addresses questions regarding European identity and culture in their past, present, and future dimensions.

These topics constitute some of the main challenges that Europe, national governments, and the European Union are currently facing, therefore a better understanding of the similarities and diversities that form Europeanness is fundamental for building a community based on values such as democracy, equality, tolerance, and the rule of law. Especially in light of ever-present or even growing tendencies such as populism or national extremism, Flagship 2's activities that focus on these core European values in their many facets are of utmost importance for shielding Europe against xenophobia, authoritarianism, and other practices that undermine human rights.

Consequently, the research and didactics undertaken within Flagship 2 that address these issues are inevitably heterogeneous and deal with various aspects of multiculturalism, economy, cultural heritage, political ideas, and legal traditions.

The multitude of topics related to Europeanness entails the use of different perspectives and methodologies, linked to the disciplines represented in Flagship 2, which guarantees a holistic view- However, three main thematic areas have been identified by the 4EU+ Alliance that characterize research questions and educational programmes of Flagship 2: "European citizenship", "Multilingualism", and "Pluralities".

European citizenship, used as a legal and philosophical term, focuses on the values, rights, and burdens that define and serve European citizens. It includes the issues of governance, regulation, justice from political, economic, and social perspectives, European regulations, and institutions. Also, subjects such as migration flows, EU core visions, digital environment, and multidisciplinary challenges are undertaken here, together with issues regarding historical aspects of European political and economic relations, international law, societal diversities, not to mention cultural representations of Europeanness and European identity in literature and arts.

Multilingualism, as the main idea of the second pathway, revolves around the ability of Europeans to use multiple languages to communicate and mediate their ideas, beliefs, values, and convictions with one another. The main topics that this pathway explores are multilingual cognition and language acquisition, language distribution, migration, minority languages, and multilingual society dynamics. It focuses also on languages in contrast, from the grammatical, to pragmatic and discursive point of view, as well as on multilingual and multicultural mediation (for example, translation and interpreting).

Pluralities, as the third research and learning pathway, has been introduced recently and tackles the internal plurality of European cultures, politics, and societies. It deals with the plurality of memories in Europe (especially concerning mass violence, politics of memory, and memory wars in Central, East, and Southeast Europe), European spaces (regional studies), European external relations, and European practices in the field of education, environmental matters, etc. This pathway aims at understanding better Europe's own complexity so that European citizens are appropriately prepared to face challenges and opportunities that arise.

The interdisciplinary character of Flagship 2, which gathers scholars from the humanities and social sciences, contributes to high-quality research-based education that addresses various topics from the Flagship 2's main theme "Europeanness". The skills and competencies students acquire are not only those indispensable in specific disciplines within Flagship 2, but also reflect the 4EU+ shared values such as multilingualism, data literacy, critical thinking, entrepreneurship, and social engagement.

The common trait of education and research offered within Flagship 2 is the idea that only this multidisciplinary, integrated approach to Europeanness will help preserve European diversity within Europe seen as a whole.

Flagship community building

Flagship 2 gathers scholars from the 4EU+ member universities whose academic interests align with the main theme of Europeanness. Currently, Flagship 2 is jointly coordinated by two coordinators: Morten Rasmussen of the University of Copenhagen and Kamila Miłkowska-Samul of the University of Warsaw. Their work is supported by Andra Jeanina Jensen of the University of Copenhagen. All fundamental issues and decisions are discussed and taken within the Flagship 2 Programme Committee that consists of 14 members (Flagship coordinators included), representing each university involved in the 4EU+ Alliance (for the time being except for the new member Paris-Panthéon-Assas University).

The three learning pathways identified within Flagship 2 have their own coordinators chosen in accordance with their expertise in the field. For European Citizenship the coordinators are Prof. Angela Lupone from the University of Milan and Prof. Zuzana Kasáková from the Charles University. Prof. Vahram Atayan of the Heidelberg University is responsible for Multilingualism and Prof. Agata Bareja-Starzyńska from the University of Warsaw for Pluralities.

The two Flagship coordinators are in constant contact through online calls and email exchanges, updating each other on the activities of Flagship 2 and 4EU+ Alliance in general. Also, online meetings of Flagship 2 Programme Committee are organised as frequently as required. The coordinators participate in other 4EU+ meetings and events, such as the 4EU+ Meeting in Geneva (18-19 April 2023, Morten Rasmussen) or iCORE Intranet workshop (21-23 June 2023, Kamila Miłkowska-Samul). Additionally, coordinators take part in meetings that ensure the efficient operation of Flagship 2, for example: meetings with local financial officers, iCORE WP3 + Flagship's meetings.

Flagship 2 representatives participate in other events organised within the 4EU+ Alliance, such as Solidarity with Ukraine – 4EU+ for Ukraine at the University of Warsaw (Prof. Bogdan Babych) and take part in reviewing process for internal 4EU+ grants.

Last year the attention of Flagship 2 was mostly set on the discussion around the future of Flagships in general and the shift in their focus from mostly didactics to research activities, too. Questions about the development of learning pathways, programmes, and micro-credentials were raised, the main point being maintaining and guaranteeing sustainability and further development of the existing projects. To this end, an internal call was published within Flagship 2 in June 2023 as a part of the Flagship budget for 2023. The idea behind this internal grant was to support mobility in educational activities under Flagship 2 that take place during 2023 or 2024 and in this way enhance cooperation and strengthen relations between partner universities.

As for student involvement, although it is not seen as mandatory in the coordination activities of Flagship 2, the general belief is that students and PhD candidates are, and should be, the main beneficiaries of Flagship 2 educational and research activities since one of the main goals of Flagship 2 is to provide students with tools and skills that will help them build the future according to the values of Europeanness.

Flagship's development

Flagships' development is strictly determined by the organisational and financial policy the 4EU+ Alliance adopts. Consequently, in the last year, Flagship 2's efforts were mainly directed towards supporting existing educational projects and promoting new innovative research through SEED4EU+ and 4EU+ Visiting Professorships calls.

Budget for 2023

The budget for 2023 was divided into two parts, the first of which was dedicated to supporting the already existing educational activities within Flagship 2, and the second to organising a Flagship 2 conference. In order to prolong already functioning educational projects Flagship 2 issued a call in June 2023, the aim of which was to select and support financially projects that continue in 2023 and 2024. The Flagship 2 management committee received and reviewed 5 project applications. Taking into account the relatively equal value of all the applications presented, the Flagship 2 management committee decided to finance all 5 of them, reducing, however, in some cases the amount requested.

Table 4: The projects that received funding in the 2023 mobility call.

Principal Investigator	Project Title
Elena Landone – Università degli Studi di Milano	SHADOW - Peer-to-peer shadowing: A pilot project for foreign language and culture learning
Vahram Atayan, Heidelberg	COOPERATIVE NETWORK PHILOTRANS
Cédric Sarré, Sorbonne University	EducatioN for The EuropeaN TEacher of the 21st century (ENTENTE ₂₁)
Karen Saban (PI – University of Heidelberg) Karolina Kumor / Katarzyna Moszczynska-Dürst (PI - University of Warsaw)	Frontiers, boundaries, thresholds: rethinking European citizenship with contemporary Latin-American migrant writers residing in Europe (2000-2020)

Kateřina Králová, Charles University	“Borderlands of Memory: Nationalism, Religion and Violence in Europe” 4EU+ Winter School 2024
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The second part of the 2023 budget has been allocated to a Flagship 2 conference. The conference *Citizenship, Multilingualism, and Pluralities: Challenges and Opportunities for Europe in the 21st Century* is to be held on 4-5 December 2023 at the University of Warsaw. The conference aims to provide an opportunity for scholars from the 4EU+ Alliance member universities to share their experiences and ideas for research projects within the Flagship 2 framework. Furthermore, it aims to facilitate the formation of teams that will apply for ERC grants and seek other forms of international funding. The research findings will contribute to the creation of research-based didactic programmes and the development of learning pathways focused on the main topics of Flagship 2, namely citizenship, multilingualism, and pluralities.

Visiting Professorships and SEED4EU+ calls

Reviewers from Flagship 2 took part in the selection process in both grant calls.

Among the nine selected proposals in the Visiting Professorships call, three are closely related to the themes encompassed by the Flagship 2 framework. They involve researchers specialising in law, archaeology and history, literature and rhetoric. The visiting professorships will not only promote research and collaboration between participant universities, but at the same time will foster research-based didactics. Moreover, they will also result in conferences, seminars, and publications.

Out of the 17 projects received in the SEED4EU+ call, three projects that fall within the framework of Flagship 2 were granted funding. These are:

(NODE) - Naming for othering in a diversified Europe across selected European languages, the University of Warsaw as the leading university;

(KTUM) - Knowledge for teaching upper-secondary mathematics: comparison and benchmarking across Europe, the University of Milan as the leading university;

(3MultiAccess) - Raising accessibility in tertiary education: 3D teaching and learning aids in the multisensory approach, the University of Warsaw as the leading university.

We believe that this new funding of research and educational activities will further strengthen the activities of Flagship 2 in the coming years.

Towards joint degree programmes

Joint degree programmes are in many respects essential to achieve great sustainability in the teaching portfolio of the Flagship. This year, the first joint degree programme has been developed and signed in February 2023. It is a collaborative venture between Charles University, University of Warsaw and University of Milan and is entitled ‘International Migration and New mobilities’.

Research: Seed funding as an opportunity

During the first project period of 4EU+, Flagship 2 has focused its activities on developing innovative education. However, a slate of mini-grants to Flagship 2 researchers has begun to add a stronger research dimension to the activities of Flagship 2. Together with the new 4EU+ grant formats such as seed funding and visiting professorships, the mini-grants aim to strengthen the research dimension of the educational innovation taking place in Flagship 2. This development is an important one, because it points in the direction of increased sustainability of the activities of the Flagship. The mini-grants have also involved a broad selection of the Alliance universities and even reached beyond the Alliance with regard to university cooperation.

Table 5: List of Flagship 2 minigrants (2022-2023)

Project Title	Participating 4EU+ Universities
Hope and Empathy in Times of Conflict in Europe	Heidelberg University University of Copenhagen University of Milan
Educating heritage language (HL) learners and pupils learning a second language (SL): Differences in approaches	Sorbonne University University of Geneva University of Milan University of Warsaw External Partner: University of Iceland
European perspective on Teaching French Language and Literature, and International Certification	Sorbonne University University of Warsaw
Bible and Europe in the Changing World	Heidelberg University University of Copenhagen University of Warsaw
Displacements: Gendered-based violence. Women's writing and creative practices in modern central and southeastern Europe	Sorbonne University University of Warsaw
From Silence to Resilience II: Assessing the Communication of Public Institutions	University of Milan University of Warsaw
Use of metaphors in languages (standard / non-standard language, slang register)	Heidelberg University University of Warsaw External Partner: Université Paul Valéry Montpellier III
Plurality of Memories in Europe in a Global Perspective	Heidelberg University Sorbonne University University of Copenhagen University of Milan University of Warsaw
RESONANT+ REsearch cOllaboration in the area of iNstitutional trANslator Training	Sorbonne University University of Copenhagen University of Geneva University of Warsaw External Partner: Ionian University, Greece
Workshops for initiation of 4EU cooperation in social sciences of sport	University of Copenhagen University of Heidelberg

European Identity Studies Network	University of Warsaw Heidelberg University Charles University
SAMSON. Nature(s) and Norms	University of Warsaw Charles University Sorbonne University

Three examples of news and developments

Educating heritage language (HL) learners and pupils learning a second language (SL): Differences in approaches

This is a project organised by Andrea Hudousková and Marie Boccou Kestřánková. The promotion of plurilingualism and linguistic diversity has always been a crucial goal of the European Union. In alignment with these objectives, the Charles University 4EU+ mini-grant along with the support of the Ministry of Foreign Affairs of the Czech Republic, the Ministry of Education of the Czech Republic, and the Czech National Agency, funded an innovative project focused on educating heritage language learners and pupils learning a second language. The aim is to build a future research-based educational programme that might be financed by ERASMUS+ or Horizon Europe.

A first conference was organised by the Institute of Czech and Deaf Studies at Charles University in Prague on 13 and 14 July 2023 and served as a platform for showcasing this collaborative initiative. Led by esteemed researchers and educators from Charles University, Sorbonne University, the University of Milan, University of Geneva, University of Warsaw, and the external partner University of Iceland, this project aimed to address the differences in approaches to language education. The conference held at Charles University aimed to foster collaboration, share knowledge, and advance our understanding of effective language education approaches. Through such collaborative efforts, the group can work towards a future where linguistic diversity is celebrated and cherished, contributing to the holistic development of the human personality, as envisioned by the United Nations' Universal Declaration of Human Rights.



Picture 13: Conference at Charles University in Prague 13-14 July 2023

Displacements: Gendered-based violence. Women’s writing and creative practices in modern central and south-eastern Europe

This project is organised by Eva Krásová and involved Sorbonne University and the University of Warsaw. Using a transnational and interdisciplinary approach, the proposed research programme confronts the polysemic category of displacement/dépaysement (exile, disorientation, dislodgement...) with the literary and artistic trajectories of Central European women. The project aims at observing how the experience of gendered-based oppression fuels the literary and artistic practices of women from a region that has been torn between different imperial structures, marked by mass violence (the Holocaust, forced migrations, war crimes...) and where culture has always been permeated by a strong dialectical relationship between norms and transgressive gestures: Two scientific events devoted to Central European women’s displacements and creative trajectories will lead to the establishment of an Erasmus+ network of researchers, bringing together junior and senior scholars as well as PhD students via a hybrid methodological seminar :

1. International conference “Displacements: Women’s writing and creative practices in modern Central and South-eastern Europe – emancipatory experiences and transnational trajectories?”, Prague, 16-17 March 2023: devoted to the displacement of Central European women, their trajectories of exile and emancipation from a transnational perspective. (<https://cefres.cz/en/events/event/displacements-women-writing>)

2. International workshop “To undergo but to resist: violence against women and strategies of resilience in the literary and artistic practices of Central Europe in the 20th-21st century”, Prague, 9-10 November 2023: focusing on the impossibility of exile, as well as women’s creative response

strategies to different forms of violence endured in the region in the light of an interdisciplinary enquiry (historical, philosophical, literary and comparative approaches). Both events are partially financed by other sources: SU, CU, UW; CEFRES.

Plurality of Memories in Europe in a Global Perspective

This project is led by Jiří Kocián and involves five Alliance universities. The project focuses on promoting a transnational approach to the multicultural plurality of memories in Europe in general, and memory conflict in Central and Eastern Europe in particular. Multiple dimensions of the narratives of the past and present are explored and viewed in the context of national and transnational actions both within and beyond Europe. The goal is to promote transnational and inclusive public history and collective memory, which is a crucial component of building a tolerant community of people and nations. In terms of implementation, as Charles University has become the leading partner within the consortium, the long-term ambition is to create a European pole of excellence in Memory Studies and to institutionalise the discipline of Memory and Public History Studies in the form of Ph.D. and M.A. study programmes. This effort is coming to fruition with a 4EU+ Certificate of Memory Studies Excellence awarded for student participation from this academic year and onwards. The project has continued the common workshops, seminars, summer schools, conferences and online platform (mailing list/website) in order to build a broad research network of experts, joint teaching projects and mobility which are vital for the educational part. Both of these pillars allow the project to maintain the cohesion of our academic network and foster its further growth by attracting a new generation of memory studies scholars, non-academic professionals and activists who will shape the future of our societies.

The objective for 2023 is to launch the Certificate programme while involving the new 4EU+ member (University of Geneva) into our consortium. As in the previous year, the project will submit a proposal for a blended learning programme providing joint teaching activities. In addition to that, the general intensification of Erasmus-related cooperation is expected to flourish. Several of the consortium members were successful in submitting Horizon Europe applications and are currently collaborating on or co-leading the respective projects.



Picture 14: Students proudly display their 4EU+ Certificate of Memory Studies Excellence

Education: from educational projects to sustainable learning pathways

Flagship 2 develops innovative teaching on ‘Europeanness’ understood in a broad sense as both institutional and grassroots perspectives as well as collective and individual facets of living in Europe and being European. It groups scholars and networks that conduct research into the past, present and future of European identity and culture. As such, it is one of the actors promoting the European model, recognised and recommended by the European Commission in its strategy for higher education institutions. Research-based education organised within Flagship 2 aims to equip students of the 4EU+ Alliance with fundamental competencies and skills that will allow them not only to thrive at the job market but also be ready to respond to the present and future challenges. Above all, it promotes values such as human rights and the rule of law, respect and tolerance for diversity and plurality as well as democratic practices. Hence, Flagship 2 addresses key societal challenges such as the preservation of a united Europe against the ever-present national extremism and protection of European values against the attempts to dismantle democracy and introduce dictatorship.

To go beyond the bottom-up innovation of 4EU+ educational initiatives funded in the first project period, Flagship 2 has developed three flexible learning pathways: [European Citizenship](#), [Multilingualism and Pluralities](#).

Following one of the main aims of 4EU+, the goal of Flagship 2 is to offer students a way to personalise their education by completing and enriching their curricula. This has been achieved by giving students access to educational activities co-developed by scholars from different academic institutions and to courses offered by other 4EU+ universities in general. Challenge still remains to make the learning pathways fully operational. Firstly, at a formal level the question of certification of the accomplishments in the LP is still to be clarified. Secondly, to generate an adequate offer of dedicated shared courses for the LP, a systemic and institutional way to contact the relevant teaching staff is needed, Thirdly, to generate an active participation of students, an efficient institutional way to inform potentially interested groups is necessary. In these three domains, the Flagship needs support from different levels of the Alliance. In the coming years, Flagship 2 furthermore aims is to underpin the three learning pathways with research activities during the new project period and at the same time continue to create and facilitate new innovative teaching initiatives within these broader themes.

From 2022 to Spring 2024, twelve courses have been or will be conducted, financed by the Alliance. However, courses that have successfully become part of existing study programmes also continue, e.g., the course “Framework for Area Studies” based at the University of Warsaw and offered via the 4EU+ Student Portal.

Table 6: Overview of Flagship 2 educational projects

Educational project	Coordinator	Participating Universities
Europe as a discourse community: language, emotion, and argumentation	Ekkehard Felder/ Vahram Atayan	UW, UHD, SU, UniMi
Cooperative Network Philotrans	Vahram Atayan, Martine Delmas	UW, UHD, SU, CU, UniMi

SHADOW - Peer-to-peer shadowing: A pilot project for foreign language and culture learning	Elena Landone	UHD, SU, UniMi
Plurality of memories	Nicolas Maslowski	UW, UHD, SU, CU, UCPH, UniMi
Dimension Francophone		SU, CU, UniMi
College of Central European Studies	Laurent Tatarenko	UW, UHD, SU, CU, UniMi
European and Comparative Legal Studies: between Globalisation and Legal Tradition	Antonia Baraggia	UW, UCPH, UniMi
Frontiers, boundaries, thresholds: rethinking European citizenship with contemporary Latin-American migrant writers residing in Europe (2000-2020)	Katarzyna Moszczyńska-Dürst / Karolina Kumor	UW, UHD, CU
Artefacts, Creativity, Technology, and Skills from Prehistory to the Classical Period in Greece. Communities of Learning in the Past and in Higher Education Today	Diamantis Panagiotopoulos	UW, UHD, CU, UCHP
MA-PhD Course on the history and politics of European cooperation since 1919. Research skills for junior researchers.	Morten Rasmussen	UW, SU, UCHP
Visual Literacy: Understanding Images across Europe - Past and Present	Karolina Mroziewicz	UW, CU, UniMi
Education for The European Teacher of the 21st Century	Cédric Sarré	UW, UHD, SU, UniMi

Three examples of the courses that have been conducted in 2022 and 2023.

Visual Literacy: Understanding Images across Europe – Past and Present

Karolina Mroziewicz

Visual literacy can be understood as the ability to "*know how to look*" at images and to deduce meanings from them. Thanks to the combination of the complementary teaching methods adopted, 4EU+ students had the chance to experience first-hand the artistic, curatorial and educational approaches to visual literacy. The project has a form of an educational module and consists of an online class, five tutoring programmes and three in-person two-day workshops,

which were held in Milan (January 2023), Prague (March 2023) and Warsaw (June 2023). Thirty students (10 from Charles University, University of Milan and University of Warsaw) and 9 faculty members participated in the project. The main outcome of the module was five group research-artistic projects carried out under the supervision of tutors. We are working on the new, more research-oriented, format of the educational module, involving BA, MA and PhD students.



Picture 15: The annual conference of Visual Literacy 12-13 June 2023 at University of Warsaw

SHADOW – Peer to peer shadowing: A pilot project for foreign language and culture learning

Elena Landone

The project develops student-centred learning of a foreign language-culture based on immersive peer-to-peer tandem video-collaboration. This approach is highly innovative because it combines mobile video communication with shadowing, which is an ethnographic field technique that has never been applied to didactics of foreign languages. It consists of a student shadower being video-connected with a student shadowee for everyday life live sessions (e.g., family meals, at academic lessons, etc.).

For the application of this approach after the piloting phase in 2020-2022, these objectives are pursued:

- 1) To extend the access to video-shadowing to a larger number of students
- 2) To hold video-shadowing telecollaboration on a regular basis (every academic year)
- 3) To build a trustable network of Departments inside the Alliance that could support the tandem technique
- 4) To continue to evaluate the improvement in intercultural competence of the students

In 2023, about 20 students were involved and combined video-shadowing with short-term physical visits. We also conducted cycles of Action-research, and four scientific papers are being evaluated and published on the intercultural learning experience of the participants.

The aim is to continue with these long-term goals, especially the strengthening of the network of Departments within the Alliance that could offer the video-shadowing to their students within their regular curricula and in compliance with the Multilingualism pathway of Flagship 2.

Cooperative Network PhiloTrans: Applied Linguistics and Translation Studies

Ekkehard Felder and Vahram Atayan

Collaborating with partner universities, the project group has successfully organised a wide range of online and blended courses, doctoral colloquiums, and workshops. Notably, they have established a fruitful cooperation with the project Europe as a Discourse Community, demonstrated by our joint efforts during the event held in Paris from 8 to 10 December 2022.

In the 2022/2023 winter semester, a comprehensive portfolio of mutually recognised online courses was introduced. This included a range of 12 seminars and lectures, reflecting our commitment to providing diverse educational opportunities. From the 2023 summer semester, the project group have seamlessly integrated the PhiloTrans online courses also into the 4EU+ shared course offer. This integration has not only improved the accessibility of our courses, but also streamlined the registration procedures.

During the summer semester of 2023, a PhD/MA workshop was organised by Professor Waldemar Czachur at the University of Warsaw from 21 to 24 June. Each partner university was represented by 2-3 students, fostering a rich and interdisciplinary learning environment.

On 9-10 October 2023, a kick-off meeting in Heidelberg will mark the beginning of an innovative course offering. This unique initiative will concentrate on the translation of texts relevant to the 4EU+ Alliance, selected in collaboration with the Alliance's Secretary General. Lecturers and MA students from our partner institutions, proficient in languages such as Czech, French, German, Italian, and Polish (beyond English), will participate in this exciting venture. Additionally, the group is pleased to extend a warm welcome to the University of Geneva, who will be joining them as an active participant in PhiloTrans activities during this event.

The project's progress and achievements have been marked by fruitful collaborations, diverse educational offerings, and the continuous expansion of our network. We remain committed to providing enriching experiences for our students, fostering an environment that nurtures intellectual growth and interdisciplinary collaboration.

In addition to maintaining a broad online offer of shared courses, they intend to offer, on a regular basis, one PhD colloquium and one joint course or seminar. These offerings will enrich

the learning experience for our students and provide them with opportunities to collaborate with leading scholars in their field of study.

The PhiloTrans scheme is the basis for the structuring of the Learning Pathway Multilingualism. PhiloTrans online courses, which are also open to students from other disciplines within the Alliance through the general Shared Courses programme, and the joint activities of our cooperative network are an integral part of the pathway. Credits for courses taken at a PhiloTrans member institution/department can be more easily recognised, even for courses that are not explicitly labelled as part of the pathway. They are currently exploring the possibility of offering an MA Double Degree (Heidelberg/Sorbonne) in Translation Studies, and compatibility between courses and programme profiles is being considered.

FLAGSHIP 3: DIGITISATION - MODELLING - TRANSFORMATION

Introduction: thematic background and goals

In Flagship 3, we use mathematical and computational methods to solve challenges related to both engineering and societal problems. Our goal is to contribute to solutions that aim not only to take technology to an unprecedented level, but also to support the transformation of society into the digital/AI age. This transformation will have a significant impact on issues such as quality of life through learning healthcare systems, Industry 4.0, and the digital transformation in society. It is also the key to tackling climate change and to using technology to achieve the EU's Green Deal targets. Students and the next generation of researchers are being trained in these technologies to be even better equipped to fulfil their societal responsibility as scientists.

Digital data, combined with intelligent analysis thereof, is the foundation of most – perhaps, in the future, all scientific disciplines. As universities of excellence in both education and research, our seven participating 4EU+ members are and must be at the forefront of this development. By pooling our expertise and ambitions, Flagship 3 aims to provide a wider and broader platform with a greater variety of educational pathways and opportunities, thereby increasing the potential and opportunities for both our researchers and students. We work in our core disciplines of Computer Science and Mathematics as well as in various fields of application, such as Physics, Chemistry, Biology, and Economics. We also more generally support any activity that involves the manipulation of models, data, and transformations. Our aims are put into practice through our projects listed below.

Flagship coordination and building the community

The established leadership team of Flagship 3 (prof. Jürgen Hesser, University of Heidelberg, and prof. Fabien Pazuki, University of Copenhagen) has focused on dividing the agenda, which is gradually growing, in the past period. The Flagship Programme Committee has been enlarged with new members replacing their colleagues and by new colleagues from the University of Geneva.

Table 7: Current list of Flagship 3 representatives (by university and alphabetically)

Name	University	Function
Kuboň, Vladislav	Charles University	PC member
Tůma, Miroslav	Charles University	PC member
Hesser, Jürgen	Heidelberg University	Flagship Lead, PC member
Queisser, Angela	Heidelberg University	Flagship Administrative Officer
Winckler, Michael	Heidelberg University	PC member
Biau, Gérard	Sorbonne University	PC member
Fresquet, Xavier	Sorbonne University	Academic staff SU
Patel, Rakhee	Sorbonne University	Administrative staff SU

Salanne, Mathieu	Sorbonne University	PC member
Pazuki, Fabien	University of Copenhagen	Flagship Lead, PC member
Sander Johannsen, Katja	University of Copenhagen	Administrative staff UCPH
Di Marzo Serugendo, Giovanna	University of Geneva	PC member
Piuri, Vincenzo	University of Milan	PC member
Vistoli, Giulio	University of Milan	PC member
Miasojedow, Błażej	University of Warsaw	PC member
Turzynski, Krzysztof	University of Warsaw	PC member

Responsibilities and contact information are kept up-to-date in the [official list provided on MS Teams](#).

Coordination and communication

- Flagship internal: Monthly PC Meetings (online)
- Public: Development of the new Flagship website in cooperation with WG Communications.

Communication at individual partner institutions:

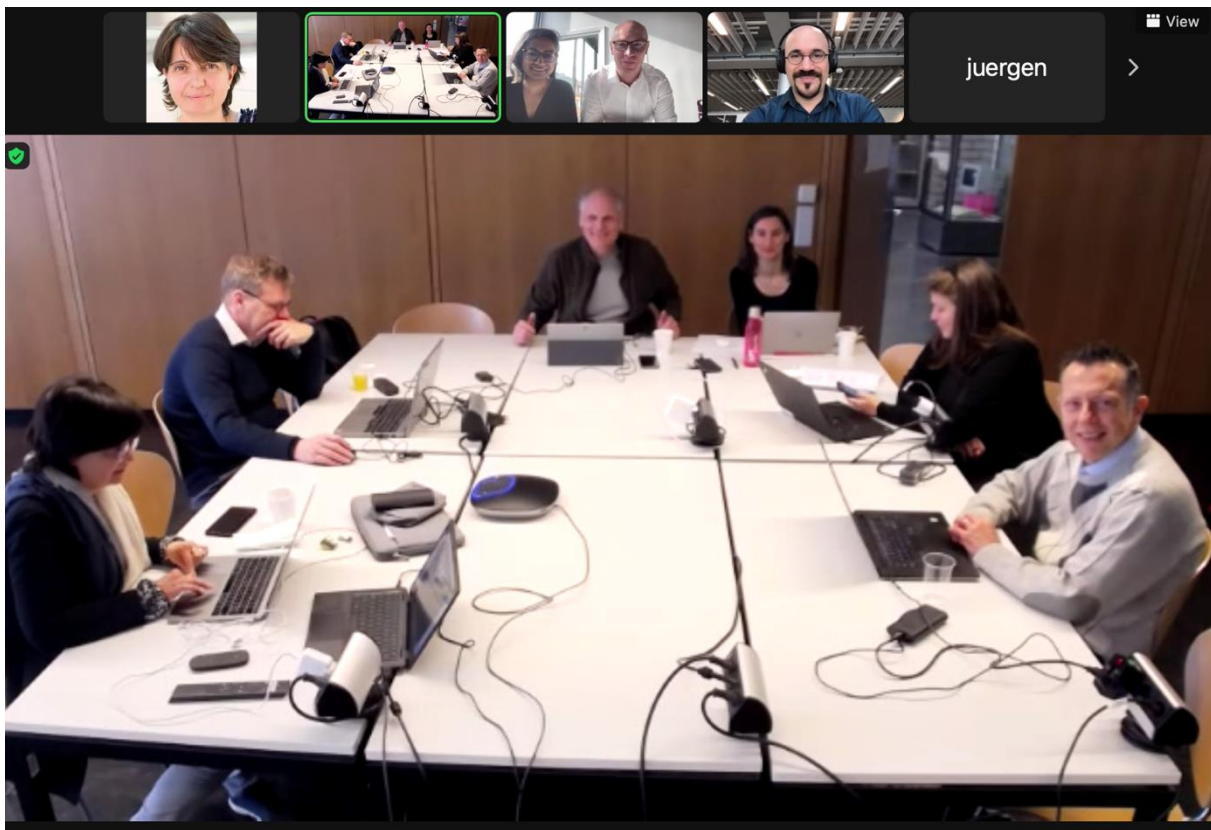
- Charles University: Inside Flagship: Regular meetings of the Flagship are organized approximately every three months. Outside Flagship: Communication via standard channels inside faculties and departments.
- Heidelberg University: Weekly meetings organized by the local office and open to all 4EU+ representatives in Heidelberg; cross-Flagship and local office meetings every two months for matters concerning the Flagships in particular.
- Sorbonne University: Monthly meetings organized by the local office for all Flagship representatives.
- University of Copenhagen: Internal coordination and information sharing practices meetings with the vice-dean for education and in the UCPH coordination committee presided by prorector, presentations at meetings with heads of studies and heads and vice-heads of departments. Calls etc. are distributed both in a digital newsletter and by direct mail to key actors such as heads of studies. For the promotion of educational activities targeting PhD students, we rely on PhD secretaries at the relevant departments. For educational activities targeting bachelor's and master's students we collaborate with the central communications department to announce them on the study information pages on the intranet.
- University of Geneva: The University of Geneva representative is the head of an interfaculty centre (computer science centre), communication through the members of the centre reaches de facto various faculties. Additional communications directly through specifically identified colleagues in other departments or through the dean's office complete the communication. The University of Geneva international office holds regular meetings with representatives of all four Flagships.

The Flagship sees in-person meetings as instrumental for community building. Our PC meeting on 16-17 March 2023, took place in person at the University of Geneva. Some PC members participated online. The agenda covered project topics, financial topics, and organisational

topics. Community building also took place during the meetings as well as informally during shared lunches and a dinner.



Picture 16: Flagship 3 meetings as instrumental for community building



Picture 17: Flagship 3 meetings as instrumental for community building

Facilitating students' engagement

Advertising of events and opportunities to the student community:

Events and opportunities within 4EU+ are actively advertised to students. For instance, students are encouraged to undertake an exchange semester at one of the 4EU+ member universities. Both students and doctoral candidates are informed about summer schools and funding opportunities within 4EU+. Through direct engagement with the student community, a Heidelberg student from the Flagship was selected to attend the [SDG Summer School](#) in Geneva and received a full stipend through 4EU+:

"Hello! My name is Raaj and I'm a Biomedical Engineering student at Heidelberg University. From 2 to 28 July 2023, I was selected for a summer school at Geneva University, Switzerland for which I received a scholarship by the 4EU+ Alliance. The highlight of the summer school was developing open-source health solutions using Artificial Intelligence and its subsets. It also involved study visits to the UN headquarters, international organizations, NGOs, etc. Lectures by experts and weekly pitching sessions of projects really helped me to broaden my knowledge. Along with the technical advantages of such an immersive program, I also got to travel around and explore a huge part of Switzerland and make loads of new lifelong friends."



Picture 18: SDG Summer School 2023

Participation in the 4EU+ Student Night in Heidelberg (10 May 2023, Heidelberg):

The Flagship presented its thematic field and course offer at the [4EU+ Student Night](#) 2023 in Heidelberg. This event was organised by representatives of the Student Executive Committee and the 4EU+ local office in Heidelberg.

Sustainable student involvement

A group of students who participated in the 2021 edition of the Bachelor Mathematics Student Task (BMST) (see below) applied (on their own) for a [Charles University minigrant in 2022](#) and received the funding. The project was completed in December 2022. The plan is for these students to be involved in the next edition of the BMST, which is currently being prepared. [Report from the completed minigrant project.](#)

International Student Workshop on Interdisciplinary Applications of Mathematics

In mid-November 2022, the [Student Workshop on Applied Mathematics](#) took place at CU. The three-day international event, supported financially by 4EU+ and organised by Charles University students in cooperation with students from Heidelberg University and the University of Copenhagen, brought closer the application of mathematics across disciplines.



Picture 19: 4EU+ Student Night

Cooperating with external stakeholders

In 2022, SAP and Volume Graphics were partners in the Integrative Think Tank organised by Heidelberg University.

Supporting key activities

The obtained budget 25.000EUR provided by the 4EU+ European University Alliance e. V., was allocated mainly to maintain existing key activities (the Flagship 3 Summer School), and to support mobilities with the aim, among other things, of strengthening the community (Flagship meetings).

Ahead of Flagship 3, there is also a challenge to incorporate new projects that are affiliated with Flagship 3 in the SEED4EU+ call. Flagship 3 was successful with two applications within SEED4EU+:

Quantum information and quantum many-body theory (QuantEU+)

Project DeepLife is a comprehensive and application-oriented teaching project aimed at introducing students to advanced algorithms and applications of deep learning in life sciences. The project builds on existing complementarities between the bioinformatics master programmes of five universities and offers a new and comprehensive course covering various aspects of deep learning approaches in life sciences. The project will focus on three active application areas of deep learning in life sciences: structural bioinformatics, application of deep learning to single-cell genomics, and biomedical image analysis. The course will be conducted in hybrid mode, with online lectures by teachers from different institutions and on-site practical exercises in the form of Q&A sessions in smaller groups. The objective of the project is to bring together strong and complementary expertise in structural bioinformatics, single-cell genomics, and image analysis from different universities. The course will culminate in a 2-day on-site hackathon where mixed teams will work on small implementation projects related to selected topics of deep learning.

Applications of deep-learning in life sciences (DeepLife)

The project aims to provide students from participating 4EU+ universities with an opportunity to learn about quantum technologies in an interdisciplinary and inter-European manner. The project has three main objectives. Firstly, it seeks to offer students access to the forefront of technological developments and research in quantum technologies, allowing them to engage in discussions with experts in the field regardless of their home institution. Secondly, the project aims to facilitate the expansion of professional networks for both students and partners involved, extending beyond the confines of a traditional Master's programme at a single university. Lastly, the project aims to promote collaborative education among partner universities by exploring innovative approaches to lecture organization, such as blended learning experiences that combine online components, group work, peer review, and in-person discussions. Given the multidisciplinary nature of quantum technologies and quantum information science, this collaborative approach is crucial, as it requires expertise from diverse fields in both research and education.

Education in the Flagship 3: pathways for BA and MA students, doctoral and postdoctoral training

With projects for Bachelor level students, two Master's degree programmes currently in development, and an annual Summer School for PhD and Master's students, Flagship 3 spans all levels of higher education. Our annual 'Integrative Think Tank (ITT)' connects advanced Master's students and PhD candidates with industry representatives, confronting them with real-world challenges and putting their research into practice on a societal level. Our 'Thinking AI' project brings computational research methods further into traditionally more analogue fields, while our 'Data Literacy' project is aimed at the public and at empowering individuals to make more informed decisions about their digital behaviour.

The educational offer in Flagship 3 consists of Bachelor's and Master's programmes in the relevant thematic fields at the partner universities as well as doctoral and postdoctoral training. In addition, the Flagship facilitates student exchanges and conducts educational projects within

the framework of 4EU+. These projects are described in more detail below. In 2023, some central projects are:

- Flagship Summer School (October 2023, Copenhagen)
- Thinking AI workshop (May 2023, Paris)
- VIRTICHEM workshops (March 2023, Milan; May 2023, Prague)

Educational projects: progress, achievements and new projects

Flagship Summer School (key project)

- Participating: all partners (lead: UW, organizer and host 2023 UCPH, co-organizer 2023 SU)
- Aim(s): Teach young scientists advanced methods to broaden their perspective and enhance their toolbox, explore innovative ideas to transform the traditional format of a summer school into a sustainable long-term event, and build scientist networks within 4EU+ for future project applications in education and research.
- Current progress: After editions in Heidelberg, Warsaw, and Milan, the 2023 Flagship summer school will take place in Copenhagen from 16 October to 20 October 2023. The topic is “[Modeling and statistical analysis of extremes in time series](#)”. This event is co-organised by Sorbonne and co-financed through [CNRS](#). In 2024, the summer school will take place at Sorbonne University. The topic will be “AI in Medicine: Optimised clinical trials with machine learning”.

Integrative Think Tank (ITT) (key project)

- Participating: all partners (lead: UHD)
- Aim(s): Connect advanced MA students and PhD students with the industry to translate real-world challenges into research questions.
- Current progress: After the first edition in 2022 in Heidelberg, the ITT will take place at Heidelberg University again in 2024.

Master Artificial Intelligence (key project)

- Participating: UniMi (lead), CU, UHD, SU, UCPH, UniGe
- Aim(s): This Master’s Degree Pathway aims at creating experts in artificial intelligence and machine learning, capable of translating theoretical knowledge into practical applications by promoting industry innovation and building innovative solutions for the citizens.
- Current progress: The new consensus is to offer this programme as a ‘double degree pathway’ to avoid confusion with a ‘joint programme’. There has been progress in the preparation of the framework agreement and comparison of curricula between the University of Milan and Charles University. It may be possible that the State Final Examination in the Czech Republic, a major obstacle for the pathway, will be waived for this programme. The next step is to extend the comparison of curricula to Heidelberg University. In collaboration with the Alliance Referee for Quality Management of 4EU+, provisions on quality management of the project were included in the framework agreement.

Thinking AI (key project)

- Participating: SU (lead), UCPH, UniMi

- Aim(s): Invite people to learn about the ethical, sociological, and legal implications of AI technologies. This project is designed specifically as a service to society.
- Current progress: [The Thinking AI courses](#) are still available online to all, 100 students are registered (Feb 2023). The procedure allowing ECTS to be awarded is in progress. A [follow-up workshop for PhD students](#) was held in May 2023 at SU on the topic of “Societal Impact of AI”. PhD students and researchers from the following partners attended: Sorbonne University, University of Milan, University of Warsaw, Heidelberg University, and Charles University. The second edition will take place at another 4EU+ member, potentially at the University of Copenhagen.



Picture 20: Thinking AI, PhD workshop, Paris, May 2023.

Heidelberg PhD student [Marcel Kückelhaus](#) (mid-center) provided the following [testimonial for the 4EU+ Instagram channel](#).

“Hey there, my name is Marcel and I'm a PhD student @uniheidelberg. #phdlife is full of challenges and amazing opportunities. Quite recently, I was able to participate in a workshop at the Sorbonne Centre for Artificial Intelligence @sorbonne_univ where I met a group of young researchers from four different countries and various scientific fields. But we all are concerned with the same topic #AI.

Being a #phdstudent, there is the risk of sitting alone at your desk at home, losing yourself in your own research. #4euplus gives students and PhD students the opportunity to make the best of your

time at university. Studying is a phantastic and unique experience. Being able to go abroad and get to know people from different backgrounds enriches this experience even more.

The workshop #ThinkingAI gave me a lot of new insights into my research topic, new motivation that what I do really matters, and maybe even some new friends! Coming together from all over #Europe, exchange ideas and views, support and help each other to develop a topic even further - that's part of the European dream. “

Digital Literacy & Data Literacy (key projects)

- Participating: UCPH (lead), UW, SU, UNIMI, CU (Data Literacy MOOC); UCPH (lead), UHD, UNIMI, CU (Cross campus online course)
- Aim(s): The aim of these two projects is to support the development of digital and data literacy for students at the 4EU+ universities
- Current progress: A MOOC in Data Literacy has been developed and is available on Coursera (+2500 enrolments, average review 4.4 out of 5). In addition, a joint 8-week online course has been developed with funding from the educational project call in 2021 (project title: “Cross-campus projects on digitalization and disciplinary transformation”). The course was initiated by a two-day seminar in Prague and had 22 participants from Copenhagen, Milan, Heidelberg and Prague representing a wide range of academic fields. This seminar form was followed up by eLearning and project work. (Comment: Due to other engagements, the Department of Computer Science is unable to allocate time for the continuation of this project. We suggest that the project ceases to be a” key project” lead by University of Copenhagen. Instead, the project in Quantum Information could be our “key project.”)

Master Mathematical Modeling (key project)

- Participating: CU (lead), UHD, SU, UW
- Aim(s): Provide a 4EU+ double degree pathway on MA level, allowing students to pursue a programme that best fits their educational goals.
- Current progress: There were some formal discussions with persons involved in accreditation at the level of the rector’s office. Some items have been cleared up formally. The next step will include agreement preparation and its communication with our partners. We need to emphasize that this project seems to be connected with such activity in Computer Science and we plan to exploit best practices and experience obtained by close communication inside the Flagship.

Research-oriented teaching: interdisciplinary projects for MSc students (key project in development)

- Participating: UniGe (lead), others
- Aim(s): The project aims at promoting pedagogical innovation and interdisciplinarity through a series of research-oriented interdisciplinary projects for MSc students involving digital aspects. Researchers from various disciplines jointly propose a research-oriented project requiring an interdisciplinary group of MSc students to carry out the project. This project is funded by a University of Geneva seed money grant of 20K.

- Current progress: Funding was secured through a Geneva call. The project is currently in development, and discussions regarding the partnership of the other universities are ongoing.

Bachelor Mathematics Student Task (BMST)

- Participating: UCPH (lead), CU, UHD, SU, UniMi, UW
- Aim(s): Involve Bachelor students to create targeted wiki articles from students for students. We form transversal groups of students, guided by a mentor, to study a topic in mathematics.
- Current progress: After two successful runs, this project was paused for one year due to uncertainties about the funding. As the funding has now been confirmed, the project will be reactivated in 2024; preparations are ongoing.

@SWitCH: Crash Course on Data Analytics for Students of Social Studies and Humanities

- Participating: CU (lead), SU, UW
- Aim(s): The aim of the project is two-fold: first, to increase the competitiveness of European higher education by creating a new educational research-based teaching partnership of 4EU+ universities. Second, to introduce a new interdisciplinary crash course aimed at improving the digital literacy of SSH students by exploring the potential of existing data and tools of the participating universities.
- Current progress: [The course is available here](#). It consists of 11 recordings made in 2022, and 4 more recordings were added in 2023.

The 4EU+ Network of Bioinformatics Master Programs

- Participating: SU (lead), CU, UHD, UniMi, UW
- Aim(s): The network aims to establish permanent exchanges between the 4EU+ bioinformatics master programmes and construct new student curricula based on the programmes' complementarities.
- Current progress: A student mobility was carried out in February 2023.

Covid-19 crisis as a model for data literacy

- Participating: SU (lead), CU, UHD, UniMi
- Aim(s): Train Bachelor's students in data literacy using the familiar case of the Covid-19 pandemic.
- Current progress: The partners are discussing the possibility of reopening the courses with slightly modified content.

Quantum Mechanics

- Participating: UCPH (lead), UniMi, UW (first and second editions), UniGe, CU, SU and UHD (second edition)
- Aim(s): The main objective is to offer 4EU+ students the possibility to learn about quantum technologies in an interdisciplinary and inter-European manner and to discuss with experts in the field irrespective of their home institution.

- Current progress: The project received funding from the SEED4EU+ call for a second edition of the course with more partners, so that all universities (except Paris-Panthéon-Assas) are involved. The course will run in the spring semester of 2024.

VIRTCHEM project: The VIRTual Immersive Education for CHEMistry and Chemical Engineering

- Participating: UniMi (lead), CU, SU
- Aim(s): Provide an innovative training course in the field of chemistry and industrial chemistry utilising different types of virtual reality (VR) software for an immersive experience within the reproduction of chemistry laboratories, an industrial chemistry plant, and investigation of structure of molecules.
- Current progress: The second edition ran with a [workshop in Milan](#) in March 2023 and a [workshop in Prague](#) in May 2023.

Science young-to-young

- Participating: SU (lead), UHD, UniMi
- Aim(s): Students from three universities collaborate in mixed groups to create professional-quality science-dissemination videos. The goal is to produce videos in three languages, highlighting the central role of data analysis and FAIR data principles.
- Current progress: The continuation and funding for the project are being discussed.

FabLab Hub (new project)

- Participating: UniGe (lead), SU, UHD, UCPH
- Aim(s): Connect existing and new fablabs to learn from each other, exchange best practices, and implement projects such as online courses (e.g., 3D printer driving license) and high school transfer projects.
- Current progress: This is a new project originally under the SEED4EU+ call. The full title is “An academic FabLab Hub for collaborative innovation and empowered learning”. The project was not funded under this call, but alternative funding options are being explored. A re-application in the next SEED call is also being considered.

Coding Dojo (possible new project)

- Participating: UniGe (lead), others
- Aim(s): The University of Geneva developed an activity called Coding Dojo aiming at increasing digital skills at three levels: high-school students, university students, and researchers.
- Current progress: Sorbonne University has shown interest in the framework, and discussion is ongoing to identify appropriate funding and to bring the Coding Dojo to 4EU+.

Flagship 3 Learning Pathways

Learning pathways in Flagship 3 are designed as double degree Master pathways. Two such pathways are currently under development. The details about the progress are listed above in the section dedicated to the educational projects and their progress and achievements. The pathways are:

- Master Artificial Intelligence
- Master Mathematical Modeling

Beyond the Master pathways, on a larger scale, the Flagship sees learning pathways as individual lifelong learning experiences. This encompasses the choice of a disciplinary BA programme, a specialized MA programme, possibly a doctorate, and continuing education during one's professional life and beyond. In this vein, courses offered by the Flagship, e.g., MOOCs, Summer Schools, and training for young researchers should eventually serve as micro-credentials or plug-in modules amounting to a specialized certificate to serve the specific needs of students, researchers, professionals, and individuals in society in general.

Shared courses

The following courses are currently running as shared courses. Courses in a purely online and asynchronous format are always open, other courses are offered at the partner universities periodically. Complete list of shared courses is in the annex.

- Always open: [Thinking AI: Bringing together ethical, legal and social aspects of AI](#)
- Always open: [Data Literacy](#)
- 01 January 2023 ff.: [ROS and experimental robotics](#)
- 09 January 2023 ff.: [Policy Design Analysis & Evaluation](#)
- 10 February 2023 ff.: [Fundamentals of Discontinuous Galerkin Method](#)
- 12 February 2023 ff.: [Covid-19 crisis as a model for data literacy](#)
- 13 February 2023 ff.: [Logic of Computation and Information](#)
- 13 February 2023 ff.: [Bioinformatics](#)
- 14 February 2023 ff.: [Numerical Linear Algebra for Data Science and Informatics](#)
- 14 February 2023 ff.: [Nonlinear Optical Spectroscopy](#)
- 14 February 2023 ff.: [Data Analytics for Students of Social Studies and Humanities](#)
- 15 February 2023 ff.: [Simulation and Theory of Biological and Soft Matter Systems II - Interfaces, Self-Assembly and Networks](#)
- 20 February 2023 ff.: [Exercer son esprit critique à l'ère informationnelle \(Critical thinking in the information age\)](#)
- 27 February 2023 ff.: [Modeling of complex biological systems](#)
- 28 February 2023 ff.: [Differential Geometry](#)
- 01 March 2023 ff.: [Protein Biochemistry](#)
- 13 March 2023 ff.: [Internet Marketing](#)
- 7-11 August 2023: Summer School "[Exploring win-win Nature-based Solutions \(NbS\) to tackle pressing global health challenges: climate change and pandemics](#)" (not on portal yet). [Four 4EU+ stipends](#) are offered by the Heidelberg Graduate School of Mathematical and Computational Methods in the Sciences ([HGS MathComp](#))

- 26-28 September 2023: [Statistical Methods for Scientists](#) (PhD course). Two professors from UCPH will give a three-day intensive course at UHD for PhD students from the quantitative sciences who do not have a background in mathematics. As there are some prerequisites, a preparatory course at UCPH (August 2023) is also open to the participants. Travel will be supported by 4EU+ mobilities.

Research in the Flagship 3

In the Flagship 3, research is most supported by stimulation of young scientists, by activities tailored for doctoral candidates, by focus on research-based education, but also by projects supported within the framework of CU or UW mini-grants, such as:

[Regulatory Sandboxes: Mirage and Reality in Public Law](#)

Participating: CU, UCPH, UniGe, UniMi

The proposed project aims to boost meaningful mobility through visits of Prague-based participants at the prestigious universities abroad. At the same time, the project also aims to increase inclusiveness and balance at a European level through the establishing of a robust network of researchers, being active in the field of the law of new technologies at the Charles University, University of Copenhagen, University of Geneva and at the University of Milano. Within this project, academicians and postgraduate students writing their dissertations on various aspects of the law of new technologies will address the feature of regulatory sandboxes. Under the umbrella of the project, short study visits at the partner universities (Copenhagen, Geneva and Milano) will be realised in the course of 2023 in order to discuss the current state and potential of regulatory sandboxes in various jurisdictions. In October, a hybrid workshop will be held in Prague, with participation of both Prague-based members of the team and representatives from the partner universities. The workshop will be devoted to the question, whether regulatory sandboxes do represent a real opportunity to facilitate deployment of new technologies, or if they are rather a matter of fashion. The written versions of the papers, presented at the workshop, will be subsequently published in AUC Juridica and will also serve as chapters in the dissertations of a student participating in the project. After the end of the last mini-grant project, the team envisages to continue research on law and new technologies under the umbrella of the **Marie Skłodowska-Curie Actions**.

External funding opportunities

When it comes to the external funding opportunities, the team at Flagship 3 also tried to take advantage of non 4EU+ funding schemes, specifically:

Marie Skłodowska-Curie Actions

- Call: HORIZON-MSCA-2022-DN-01
- Project: Challenging AI with Challenges from Physics: How to solve fundamental problems in Physics by AI and vice versa.
- Submitted: 15 November 2022
- Outcome: The accumulated points were below the funding threshold. We are about to reapply.

Different opportunities have been explored also for other initiatives, such as:

- [Université franco-allemande/Deutsch-Französische Hochschule](#) for “Sorbonne-Heidelberg workshop on AI in Medicine: Optimized Trials with Machine Learning” (Flagship Summer School 2024). The application was not successful in this round, but we will reapply, and were in fact encouraged to do so.
- The Flagship Summer School 2023 is funded partly through CNRS
- Geneva grants (20k) for Coding Dojo.

Visiting Professorships affiliated to the Flagship 3

As part of its long-term commitment to foster collaboration in research and teaching, the 4EU+ Alliance has launched the 4EU+ Visiting Professorship initiative, funded by the 4EU+ Association budget.

The call was open to all junior and senior academics who wish to become visiting academics in order to perform common research and educational activities in all scientific areas and disciplines that promote the 4EU+ Flagships’ research and education strategies.

A successful candidate affiliated to the Flagship 3, Krzysztof Wohlfeld from the University of Warsaw will become a visiting professor at the University of Geneva. His project targets two primary goals. The first aim of Dr. Krzysztof Wohlfeld’s engagement with Prof. Louk Rademaker’s group is to cooperatively decipher the exotic properties of transition metal dichalcogenides (TMD) on Moiré superlattices. The TMDs are innovative, highly adaptable materials that have recently instigated a “revolution” in materials science. The second aim is to engage Bachelor, Master, and PhD students from the University of Geneva and the University of Warsaw in jointly led projects, creating a 4EU+ research team focused on these novel connected materials.

FLAGSHIP 4 ENVIRONMENTAL TRANSITIONS

Introduction of the Flagship

Thematic focus and social relevance

An ever-increasing demand on resources and serious disruptions from climate change are topics that must be efficiently addressed by contemporary science, and which must be based on deep understanding of the underlying processes and principles. Adequate education of future specialists in the field of natural sciences must be based on high-quality research, while long-term maintenance of the research community cannot exist without top quality education of new generations of researchers.

The Flagship 4 Environmental transitions (former: Biodiversity and sustainable development), is dedicated to both education and research that will ensure high quality research to find solutions to our sustainable development needs. Thus, the Flagship 4 pursues the following topics:

- Research in the life, earth, chemical, environmental sciences, biology of organisms, ecology, biodiversity, evolutionary biology, environmental protection, environmental policy and economy, geoscience, crop science, environmental law, environmental sciences, economic and social sciences, arts and humanities, resilience sciences, thus providing a sound basis for multidisciplinary research.
- Construct an inspiring, multidisciplinary environment for students, with shared expertise in science: teaching-through-research, resources and infrastructures, including well-tailored joint master programmes, exchange semesters, summer schools, and short intense joint courses.
- Contribute to the environmental education of society, in Europe and across the globe, including suggestions and solutions that would address complex relationships between society, economy and the environment and the communication of these solutions to a diverse audience.

Flagship governance and organisational structure

Flagship 4 is jointly coordinated by two Flagship leaders (academic coordinators) from two different universities: Sorbonne University (Prof. David Siauxsat) and University of Geneva (Prof. Geraldine Pfeiffer). One Flagship assistant from Sorbonne University (Lilia Brimaud) supports the work of the academic coordinators. The strategic issues are discussed within the Flagship 4 programme committee consisting of 12 members (including Flagship leaders), with two representatives from each 4EU+ university. A specificity of our Flagship is the inclusion of members of the administration, with an administrative representative from each university, bringing the total number of representatives to 18.

The two Flagship leaders and the assistant have regular exchange by emails and meet regularly, through online calls scheduled once a month, as well as in additional occasions when needed. They communicate by email and use shared documents. They participate in all 4EU+ meetings to represent the Flagship and transfer the information to the F4 committee. This includes meetings such as discussion with the Management Committee of the Alliance, meetings devoted to the iCORE project, student portal project, etc.

They also actively transmit all information coming from the 4EU+ Alliance to the group. If the meetings are accessible to wider audience, the information is communicated within the committee so that F4 members can attend certain meetings.

The F4 committee meets on average once a month. Meetings take place online. Every year a physical meeting takes place during the Alliance's Annual Meeting. The agendas and subjects are based on the news within the Alliance or the projects to be pursued or discussed.

It should be noted that there were several personnel changes within the composition of the F4 committee this year. Therefore, some meetings were necessary to introduce people and explain the matters. Moreover, co-leadership is relatively recent thanks to the entry of Geneva into the Alliance. Géraldine Pfeiffer agreed to become a co-leader during the period.

General strategy

During the last year (November 2022 – October 2023), the focus of Flagship management was on two main issues.

Firstly, there was a general discussion regarding the articulation of Flagships' position within the 4EU+ Alliance and the mission statement, with an emphasis on the need to formulate long-term strategy, to ensure sustainability of existing educational projects and to improve the communication between the partners and the various bodies of the Alliance. This highly strategic issue has led us to postpone several other initiatives, whose commencement or advancement will depend on our responses to the missions and the long-term strategy.

Secondly, we engaged in discussions about sustainability as well as continuity and further development of existing projects. The main aim was to monitor the progress of the projects that had been launched and to discuss the financial support for the projects that emerged from the previous calls of the Alliance.

In addition, our meetings addressed questions related to the actions of the Flagship for iCORE and expectations regarding the student portal or the new website. There were also several exchanges about the planning of the Flagship budget, which still needs further development. This is a novel exercise for the Flagship and will demand further discussions and brainstorming during 2023 and 2024. The positioning of the budget will depend on the Flagship's missions and the long-term strategy.

Flagship community building

The Flagship 4 committee is in contact with the various communities which represent the many themes concerning environmental transitions. Each partner has established a methodology in order to disseminate information within these communities and to obtain information if necessary. Specific workshops have thus been organised in the past to discuss emerging teaching projects ahead of a call for proposals from the Alliance.

In an Alliance under construction, this is an action which still has room for improvement and which deserves to be further developed for the Flagship 4 in the coming years. The challenge is to find an appropriate format to be able to meet a very wide diversity of disciplines.

At the level of individual Alliance member universities, meetings are organised between Flagships and coordinators of local 4EU+ offices to enhance mutual coordination, exchange experience and learn about both good practices as well as obstacles and shortcomings.

Involving the students

The Flagship 4 committee has so far worked on the development of teaching and research activities in which students and doctoral candidates from 4EU+ universities can learn, meet and cooperate. The doctoral students were involved in the development of the educational project in order to tailor the course to their needs and interests.

Cooperating with external partners

To date, there is also no work developed with partners by the Flagship 4 committee directly. Collaborations or partner names sometimes emerge in discussions but are not yet formalized in the Alliance's collaborative programmes. The activities currently being worked on do not provide for the development of partnerships either, but nothing prevents us from studying the question in the next stages.

Flagship's development

Several discussions took place on the development of possible activities and trajectory for the Flagship 4. As the role of Flagship initiatives and the development potential of Flagship initiatives are largely determined by the general framework set at the level of the 4EU+ Alliance, there is a strong expectation of this framing to be able to make choices on future developments of activities.

As a result, the activities of the past year have mainly been focused on the management of activities promoted by the Alliance (iCORE, support for educational activities developed during the previous period, SEED4EU+, 4EU+ Visiting Professorships) or proposed by certain universities Alliance members, such as Charles University mini-grants.

Budget for 2023

A budget of 25,000 euros for 2023 was provided in the spring by the 4EU+ association to each Flagship. This budget came in response to a request to fill the absence of financial support necessary for the sustainability of Flagship activities. A reflection was therefore carried out by the members of the committee to define the financial commitments for 2023. This work could not be fully completed because of the lack of definition of the mission statements of the Flagships desired by the Alliance. Moreover, the ongoing institutional reorganization and reconstruction have impeded the members' projection regarding future developments and activities. While there was an initial inclination to fund educational projects identified in the previous period, a subsequent review found it redundant since the Alliance had already approved the necessary financial support.

Given the current situation and the announcements of meetings to address the problems of vague framing, the committee decided to carry out a half-day workshop before the Annual Meeting in November to discuss the strategy and activities in light of future developments.

The rest of the budget should be carried over to 2024 to finance actions that could not be decided in 2023.

Research

CORE+: Chemical and biophysical investigation Of Ribosome Emergence:

CORE+ is a CU mini-grant led by Klára Hloučková in partnership with Sorbonne University and the University of Milan. The goal of CORE+ is to explore the chemical and biophysical basis of the emergence of protein-RNA interaction to form the ancestral ribosome. Joint experiments and simulations on the same systems, together with remote and in person discussion sessions, will strengthen preliminary results and will allow to identify the most promising and plausible paths for application to larger grant schemes. By connecting interdisciplinary expertise in three 4EU+ universities, it may also seed the development of a joint teaching module about prebiotic studies, open to contribution from other nodes, which is now missing. We aim to apply for COST action grant to further evolve the collaborative network and to the ERC synergy (or potentially Human Frontiers Science Program) grants to reach the research goals.

Ribosome, the protein synthesis macromolecular machine, undisputedly lies at the very origin of today's variety of life. Its complex of RNA strands and proteins, and in particular its catalytic core Peptidyl Transferase Center (PTC), has been proposed a molecular fossil of early life. CORE+ builds on the previous 4EU+ CORE project to investigate the key chemical and biophysical phenomena at the basis of the emergence of nucleotide and peptide sequences, and the processes that may have led to their functional co-assembly in PTC, like spontaneous liquid-liquid phase separation, conformational transitions and ligation reactions. Three complementary teams provide their expertise and tools: biochemistry and synthetic biology in Prague, biophysical characterization in Milan and computer simulations in Paris. Starting from current PTC, we will experimentally investigate how patterns of nucleotide and peptide sequences and their folding affect – and are affected by – formation of complexes and demixing, leading to high local concentration and to the emergence of catalytic capability and polymerization. Novel simulation approaches, including AI tools, will allow to model such phenomena from the atomic to the macromolecular up to the polymeric scale. 4EU+ is already supporting shared experiments (a student from Milan is performing part of his master thesis in Prague) and contributed to the international Summer School “Paris Advanced School on Origins and Evolution of Life”, organized by Saitta in Paris in September 2022, a timely occasion of discussion and dissemination. Further collaboration will help to boost a new research network on prebiotic studies within 4EU+.

From Fungal Morphology to Genotype:

This CU mini-grant is in partnership with the University of Copenhagen (Jacob Heilmann-Clausen) and the University of Warsaw (Julia Pawłowska) and it is led by Ondřej Koukol. This mini-grant is focused both on research and education. Fungal diversity-oriented studies have essential role in nature protection, environmental impact assessment and monitoring surveys. Recent instrumental advances such as mobile DNA labs and MinION sequencing technology enable coupling of phenotype-based identification with data on sequence similarities of selected molecular barcodes already in the field. This approach is rapidly developing and has a strong ambition to fill the gap where the majority of fungi known to science is not represented in public databases by sequence of any barcode. Specialists experienced in using a combination of both phenotypic and molecular data in fungal identification will soon represent invaluable team members.

Since 2020, the Summer School organised jointly by CU and UW proved this concept of combined methods in fungal research and we propose an extended activity including also UCPH and novel methodical approach. In 2023, Summer School took place in Góry Stolowe, National Park that has been long overlooked in fungal diversity research. Participating students were

trained in the field sampling and phenotype-based identification of fungi coupled with analysis of DNA sequences. For the first time, the MinION sequencing tool was used to generate sequences of selected molecular markers in the field. These activities were combined with workshops on scientific drawing, voucher preparation, and lectures given by internationally recognized European mycologists. Mycological survey in the NP also has the potential to enrich global databases of fungal occurrences and deposit the most valuable material in fungaria.

Remote Sensing of the Cryosphere Dynamics under the influence of Climate Change

This CU mini-grant is in partnership with Heidelberg University (Marcus Nüsser) and the University of Milano (Prof. Irene Maria Bollati) and it is led by Ing. Lukáš Brodský, Ph.D. This mini-grant focuses on research and education. The project aims to foster collaboration with partner universities in Heidelberg and Milan on multidisciplinary research linking remote sensing and artificial intelligence on the cryosphere, geomorphology, geohazards and climate change. We aim for multidisciplinary research to study the glacier dynamics influenced by climate change in the long-term perspective. The newly established team includes researchers from universities with complementary expertise. The Department of Applied Geoinformatics and Cartography, Charles University brings expertise in remote sensing, computational models, and artificial intelligence. The expertise of the Department of Geography, Heidelberg University lies in the field of cryosphere research and remote sensing in high mountains. The Earth Science Department, University of Milan offers expertise in geomorphology, dendrogeomorphology and remote sensing. Finally, the Department of Physical Geography and Geoecology, Charles University specialises in geohazards and remote sensing.

The main planned activities cover arranging joint workshops to elaborate the research topics (involving researchers, PhD, and master students). We have already identified suitable glacierized areas in the Alps to study the research topics. We will apply and evaluate selected remote sensing methods, historical repeat photography, structure from motion and machine learning methods on glacier changes together with geomorphological and dendrogeomorphological methods. We plan to conduct in-situ data collection for ground truthing. The expected outcomes include establishing a research team with shared research objectives and complementary experience. An initial research paper on the sophisticated combination of diverse methodological approaches will be prepared for a more extensive follow-up project to establish long-term collaboration. We jointly agree to apply for ERASMUS+ Key Action 2 (KA2) – Cooperation among organizations and institutions— Partnerships for Cooperation.

We jointly intend to apply for ERASMUS+ Key Action 2 (KA2) – Cooperation among organizations and institutions— Partnerships for Cooperation. From a longer perspective, we believe we could establish a larger team to apply for the Horizon Europe project as well, though not within the timeframe of this mini-grant. Simultaneously, we are exploring other European grant opportunities (e.g. CHIST-ERA and COST) to support the establishing research team.

Ruderalization and invasive species spread as a consequences of land abandonment in European landscapes after 1990: detection and assessment using remote sensing

This mini-grant led by doc. RNDr. Lucie Kupková, Ph.D., Department of Applied Geoinformatics and Cartography of Charles University, establishes a partnership with 4 other 4EU+ Universities: Heidelberg University (Dr Katharina Anders), the University of Copenhagen (Alexander Prishchepov, Ph.D), the University of Geneva (Dr. Gregory Giulian) and the University of Warsaw (Dr. hab. Bogdan Zagajewski). This project encompasses both research and educational elements.

Cultural landscapes are the result of long-term human–environment interaction, nevertheless they are worldwide vulnerable to processes of global change including land-use change. The contemporary trend in the development of cultural landscapes in Europe is characterized by two opposite processes – intensification and extensification. Both processes are complementary and lead towards a considerable polarization in landscape use. While intensification is clearly evaluated negatively from a landscape-ecological perspective, the environmental and ecological consequences connected to processes of marginalisation and abandonment of agricultural land are ambiguously accepted. The reduction of anthropic pressure on the landscape is certainly positive from a landscape ecological perspective. However, land abandonment can also have negative consequences, among others, the ruderalization and expansion of invasive species finally leading to the decline of biodiversity.

Remote sensing, with its increasing spatial, spectral and temporal resolutions, has become a powerful tool for detection and assessment of land abandonment and its consequences. In 2022, our group of 4EU+ universities started working on the topic of agricultural land abandonment. Scientific plans were discussed, data for a test area of abandoned land in Czechia (nearby Kutná hora) were acquired and methods of analyses tested. As a base for an intended project proposal, a joint publication defining gaps in this scientific field was prepared for submission. In 2023, our ambition pivots towards employing remote sensing in the detection and assessment of land abandonment consequences-such as various succession stages, ruderalization, and invasive species spread detection and assessment. These activities will lead to a joint European project proposal.

Development of further scientific activities of our 4EU+ group is focused on land abandonment and its consequences - testing remote sensing data and development of methods for the detection and assessment of further processes connected to the land abandonment – ruderalization and invasive species spread. Future initiatives encompass networking (joint workshop organisation), integrating a new 4EU+ member, i.e., University of Geneva. We are in the process of preparing a second publication focused on case studies of land abandonment consequences evaluation in selected European countries using data and methods of remote sensing. We also intend to prepare and submit a joint project proposal (Erasmus+ or Horizon Europe or other).

Tomorrow's research and science innovation in students' start-ups

This event, organised within a student mini-grant project, brings together students from the 4EU+ Alliance universities to let them share and exchange information and ideas about how to develop an original start-up idea. The 1st [4EU+ Tomorrow's Research and Science Innovation in student start-ups](#) (4EU+Transition) took place in Prague on the 10-11th November 2022. The second edition of the event will take place at the University of Geneva on 9 and 10 October 2023. The following activities are planned during the session in Geneva:

- learn how to develop an original start-up idea,
- connect with an international community and engage with a diverse community of students, entrepreneurs, and innovators from the 4EU+ Alliance universities,
- build connections, exchange ideas, and foster collaborations,
- explore innovation hubs and accelerators and learn how they support start-up ideas within different universities,
- hear from successful start-ups and get inspired by the stories, journeys and experiences of their founders.

Collaborative research on high mountain cryosphere under the influence of climate change

This seminar took place at the Faculty of Science of Charles University on the 20 September-22 September 2022. The seminar aims to bring together people from partner universities (CU and UniMi) to cooperate and share knowledge on the impact of climate change on the Mountain Cryosphere.

Ethics in traditional livelihoods and arts: a way forward for agroecological development

This UW funded mini-grant is led by Dr. Katarzyna Bielińska, Faculty of Philosophy, University of Warsaw, and is implemented by a team comprised of academics from Charles University, University of Copenhagen, and University of Milan. The goal of the project is to prepare and submit a joint grant proposal, on the topic “Ethics in traditional livelihoods and arts: a way forward for agroecological development” (working title). The project will use an interdisciplinary approach combining socio-economic analysis, ethical and agroecological analysis to reconstruct the axiological and normative landscape of rural communities in peripheral and semi-peripheral regions in their diversity and then analyse them comparatively. The outcome of our research will be a comprehensive comparative critical analysis of diverse traditional sets of norms and values, and determining the role traditional knowledges and ethics can play in tackling global environmental challenges. The analysis will therefore grant the possibility to assess the axiological reasons behind the often-mentioned improved sustainability brought by the traditional knowledge related to resource management and to the traditional development of socio-ecological systems, which is implicitly summoned by the agroecological approach and values.

Using external funding schemes

Application for Erasmus Mundus Design Measures for designing an Erasmus Mundus Joint Master titled “Master in European Environmental Economics & Management” (M₃EP). Lead applicant: Heidelberg University. Partners: University of Copenhagen, Charles University, University of Milan, University of Warsaw. Submitted on Feb. 15. Outcome: Positive funding decision (€55k). Start: November 2023.

Erasmus+ Blended Intensive Programme funding: educational project Collegio Futuro Receiving and coordinating institution: Heidelberg University. Partner (sending) institutions: Charles University, Sorbonne University, University of Milan, University of Warsaw. Start: October 2023.

Education

Extension of competences and knowledge-based education of natural hazards and environmental change:

This educational project brings together three Alliance universities. It is led by Charles University in partnership with the Heidelberg University and the University of Milan. The main objective is to extend trilateral cooperation in the educational process at Master and PhD level focused on sharing competences in modern analytical methods and complementary technologies addressing key challenges in the research of impact of environmental change and associated natural hazards.

Collegio Futuro - A college for future leaders of a sustainable European future:

Collegio Futuro is a training for doctoral candidates that involves five Universities of the 4EU+ Alliance: Sorbonne University, Charles University, Heidelberg University, University of Milan and University of Warsaw.

The project aims to strengthen competencies in interdisciplinary communication and to promote the communication of scientific findings to society. It combines challenge-introducing impulse lectures with inquiry- and project-based learning in multidisciplinary groups. Young researchers receive professional and tailored training from senior researchers and have the opportunity to establish their network and generate novel concepts and research ideas.

Use of genomic editing through CRISPR / Cas9 for the protection of species of agricultural interest – CRISPRes:

This educational project brings together three Alliance universities. It is led by Carlo Pozzi from the University of Milan in partnership with the University of Copenhagen and the Charles University.

The project is based on one lab workshop (LW), carried out at UniMi, and two active learning-based workshops (ALW), conducted by UCPH and CU personnel via eLearning. A blended approach can be envisioned also for the lab workshop, if required by social distancing measures.

ABC in biodiversity:

This educational project brings together three Alliance universities. The project is led by the University of Warsaw in partnership with Sorbonne-University and Charles University.

This modular transdisciplinary student-centered educational curriculum in biodiversity aims to support students in navigating through contemporary environmental crisis and foster their involvement and leadership in finding innovative solutions to problems they will face in their lives. Our vision is to achieve this by providing an opportunity to deepen understanding and broaden perspective

Biodiversity, sustainability in the agro-food system 4EU+ Microcredentials (MICROBS):

MICROBS is a project that involves five Universities of the 4EU+ Alliance: Sorbonne University, Charles University, the University of Copenhagen, the University of Warsaw and the University of Milan, which is the lead beneficiary of the project.

The project aims to set up a dynamic and multidisciplinary new curriculum that will offer specific micro-credentials to students in each partner university. The topics addressed will cover biodiversity and the sustainability of food systems, and their implication in society.

Manage and Organize Virtual Excursions (MOVE):

MOVE is an innovative project focused on designing online virtual excursions in Geoscience, involving master students in a two-year endeavour. The project includes various tasks such as defining scientific themes, organizing webinars, refining itineraries, creating films and outreach products, and running the excursion. Through MOVE, students develop critical thinking skills, active learning, and engagement in outreach activities.

A Gate Opener for a Master Joint Degree on Environment and Development:

This educational project brings together three Alliance universities. Carlo Pozzi from the University of Milan leads the project in partnership with the University of Copenhagen and the University of Warsaw.

EnviroGate is a project focused on establishing a Joint Master Degree (JMD) in Global Environment and Development (GED). The project involves teacher mobility to design and develop new joint courses, as well as student mobility to create an innovative JMD. Over a period

of two years, this JMD delivers comprehensive 120 ECTS, with a focus on interdisciplinary problem-solving in environment and development management. EnviroGate aims to secure funding for teacher mobility and facilitate the participation of 30 students from three institutions.

MERGED: Erasmus Mundus Joint Master in Global Environment and Development

The inaugural cohort of MERGED students has recently commenced their studies. The programme's description remains unaltered. MERGED's overarching objective is to produce globally competitive graduates adept at identifying critical facets of renewable natural resource management for economic, environmental, institutional, and societal advancement, as well as devising apt and viable solutions. We aspire to offer the inaugural joint degree among our partner institutions and the 4EU+ European University Alliance. MERGED is jointly provided by the University of Copenhagen, Faculty of Science; the University of Warsaw, Centre for Environmental Studies and Sustainable Development; and the University of Milan, Department of Agricultural and Environmental Sciences. All of these institutions are integral members of the 4EU+ Alliance, wholeheartedly committed to concurrently strengthening pedagogical collaboration, elevating teaching quality, and expanding cooperative initiatives. Our collaborative efforts extend to a robust global network of Associate Partners. MERGED operates on a global scale, advancing a European perspective on the environmental-development nexus, augmenting its allure through the programme's repute, pioneering pedagogical methodologies, comprehensive cross-national and cross-institutional synergy, and the career trajectories of its graduates.

Flagship 4 Learning Pathway

Biodiversity, Ecology and Evolution:

We have launched the Biodiversity, Ecology and Evolution learning pathway which starts now: The Biodiversity, Ecology, and Evolution learning pathway is part of the educational offer of the 4EU+ Alliance, with the aim to mitigate current limitations. By promoting data literacy, critical thinking and entrepreneurship, we want to educate biodiversity researchers and policymakers for the future on common biodiversity monitoring standards that transcend national borders. Through innovative teaching and learning methods, we intend to benefit from a wide range of experts in specific taxonomic groups from different universities. This approach utilizes modern analytical tools that often require an interdisciplinary approach, within an international environment.

Upon completion of an educational pathway, students will receive a certification in the form of the Letter of Attendance with a supplement listing the skills and abilities they have acquired. The Letter of Attendance is issued on behalf of the 4EU+ European University Alliance.

Dual Degree on Ecology and Evolution:

We are currently developing a dual degree between the University of Warsaw and the University of Copenhagen in Ecology and Evolution.

Longer-term perspective

The joint and shared courses of Alliance's member universities, emerging either from educational projects or from regular courses within the existing programmes, are evolving into joint education modules, joint Master programmes and learning pathways.

M.Sc. level

Five of the 4EU+ members (CU, UCPH, UHD, UniMi and UW) are preparing an application for a joint M.Sc. program "**Master in European Environmental Economics & Management (M₃EP)**", to be submitted under the Erasmus Mundus Joint Master Programme (EMJM). The endeavour emerged from the 4EU+/F4 educational project (2020/F4/11) "*Towards a European School of Environmental Economics & Policy (EuSEEP)*" which conducted two Spring Schools, one in April/May 2021 and a second in April/May 2022, on the topic of "The Making of EU Environmental Regulation". The M₃EP mission is to educate future environmental policy professionals about the conceptual foundations, analytical skills and methods, and integrated problem-solving techniques of economics and policy. This education will equip them to effectively design, implement and analyse policy solutions to the complex environmental challenges facing European and international societies today. The M₃EP Partners submitted an application to the European Commission in February 2023 for an Erasmus Mundus Design Measures. This application resulted in a positive funding decision at the end of July. The submission of a joint application for EMJM is planned for February 2025.

PhD level:

A college for doctoral candidates, Collegio Futuro, aims to foster interdisciplinary communication and research, encouraging young scientists to communicate science to the public. The goal is to provide a regular course for doctoral candidates on a yearly basis that will complement their research-discipline-specific competences with the ability to discuss research questions in an interdisciplinary setting. Emerging from one of the 4EU+/F4 educational projects, this training is currently founded as an Erasmus Blended Intensive Programme, with the ambition to apply for long-term external funding in the future.

CONCLUSION

The document provides a thorough examination of the progress and advancements made in the 4EU+ Flagships from November 2022 to October 2023. By methodically outlining each Flagship's thematic focus, social relevance, and goals, the report gives a nuanced understanding of their respective missions. It also offers insight into the organizational changes and governance structures that have evolved over the past year. Importantly, the document goes beyond merely describing structures, shedding light on opportunities for student engagement and stakeholder involvement, thereby offering insights into how each Flagship community is cultivated. The Flagships Annual Portfolio is a document intended to be prepared annually.

What can be taken from the presented portfolio to the next discussion? 4EU+ Flagships, as pillars of the Alliance, need to think in the longer term. This involves, on one hand, addressing the sustainability of existing and emerging activities, and on the other, effective implementation of new activities and initiatives, their focus and assessment of their relevance. In this regard, the emerging Alliance strategy for 2025-2035, to which the Flagships are also contributing, will be highly influential. Further development of the Flagships will also facilitate the clarification of the role and position of Flagships within the Alliance structure.

The data and experience collected in this document will also be analyzed in order to initiate or continue the discussion, in accordance with the emerging Alliance strategy, with relevant stakeholders.

Overall, the document serves as a comprehensive overview that highlights not just the accomplishments but also the future aspirations of the 4EU+ Flagships. It emphasizes the collective commitment to educational innovation and research, thereby underscoring the importance of these Flagships in shaping a more integrated and effective higher education landscape.

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ANNEX

The list of shared courses affiliated to the Flagships.

Flagship 1

Course title	EC TS	Level of study	Semester	University
Allergology	4	BA, MA, PhD	summer	CU
Molecular imaging	2	MA, PhD	summer	
Radiological Anatomy	1	MA, PhD	summer	
Selected chapters of immunopathological conditions	2	BA, MA, PhD	summer	
Seminar: Longevity studies	0	PhD	summer	
Surgery case reports - SS	4	BA, MA, PhD	summer	
Applied Embryology	4	BA, MA, PhD	winter	
Applied Histology	4	BA, MA, PhD	winter	
Brain - mechanisms and pathophysiology of its higher functions	5	BA/MA/PhD	winter	
Gynaecologic cytology	3	BA, MA, PhD	winter	
Seminar: Longevity studies	0	PhD	winter	
Technical equipment in radiology, nuclear medicine and radiotherapy	2	BA/MA/PhD	winter	
North American City	2-5	BA/MA	winter	UHD
The situation of people with dementia in general hospitals. Current state of knowledge, opportunities and challenges	1	BA/MA	winter	
Schools and Theory	2-5	MA/PhD	winter	
Biodiritto	9	MA	summer	UM
Global Social Inequalities	9	MA	summer	
Molecular Biophysics	6	MA	summer	
Physical and Rehabilitation Medicine (part of Bone and Joint Diseases)	1	MA	summer	
Biotechnologies: experimental models in research	12	MA	winter	
Clinical practice 6th year - Exercise and sport medicine	1	MA	winter	
Rehabilitation Medicine in Europe to face disability growth due to aging and medicine improvement	1	MA	winter	

Structural and Mechanistic Enzymology	6	MA (2nd year)	winter	SU
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Flagship 2

Authority in Education	2	BA/MA	winter	CU
Classic works of mathematics education	4	MA	winter	
Computing in Education	6	BA/MA	winter	
Czech Constitutional Law	6	BA/MA//PhD	winter	
Czech Culture through the Prism of Czech Humanists, Thinkers and Artists	3	BA/MA/PhD	winter	
Development of critical thinking in teaching French	15	BA/MA/PhD	winter	
Equity in Education	6	BA/MA	winter	
Financial Law	6	BA/MA/PhD	winter	
Francophone Literatures - Literature of Quebec	5	BA/MA/PhD	winter	
French Literary Criticism I	3	BA/MA/PhD	winter	
Fundamentals of Law and Professional Ethics I	5	BA/MA/PhD	winter	
Head-Hunting, Cannibalism and Colonialism in Oceania	5	BA/MA/PhD	winter	
History of mathematical thinking	5	MA	winter	
Human Rights: Justice, Reason, Intellect and Participation	5	BA/MA/PhD	winter	
Intellectual Property Law	3	BA/MA/PhD	winter	
Intermediate Latin I	3	BA/MA/PhD	winter	
Introduction into Central European Legal Culture	3	BA/MA/PhD	winter	
Introductory Latin Course I	3	BA/MA/PhD	winter	
Israeli Minorities: Ethnicity, Gender and Religion	5	BA/MA/PhD	winter	
Jewish history and literature through the prism of translation	3	BA/MA/PhD	winter	
Late Byzantine and Post-Byzantine Thought	5	BA/MA/PhD	winter	
Literature for Children and Youth	6	BA/MA/PhD	winter	
Moving pictures and the Balkans - Yugoslav Cinema	4	BA/MA/PhD	winter	
Multiculturalism in Education	2	BA/MA	winter	
Natural Resources Law	6	BA/MA/PhD	winter	
Philosophy and Medicine	3	BA/MA/PhD	winter	

Pragmatics in Czech	5	BA/MA	winter
Psycholinguistics	5	BA/MA	winter
Quality in Education	6	BA/MA	winter
Studies of the ICC Case-Law	3	BA/MA/PhD	winter
The World of Documentary Film	5	BA/MA/PhD	winter
Theology of Education	5	BA/MA/PhD	winter
Business Law and International Business Transactions	6	BA, MA, PhD	summer
Cities of Exile: Prague and Zürich, Literary, History and Politics	5	BA, MA, PhD	summer
Comenius: Teacher of Nations	5	BA, MA, PhD	summer
Computing in Education	6	BA, MA	summer
Czech for heritage language learners	3	BA, MA, PhD	summer
Equity in Education	6	BA, MA	summer
Ethics for Social Work	5	BA, MA, PhD	summer
European cultural heritage - music	5	BA, MA	summer
Everyday Life Under Socialism: Strategies and Practices A	4	BA, MA, PhD	summer
Everyday Life Under Socialism: Strategies and Practices B	6	BA, MA, PhD	summer
French Literary Criticism II	5	BA, MA, PhD	summer
French Literature and Cinema	5	BA, MA, PhD	summer
History of the Spanish theatre - from its beginnings to the 20th century	5	BA, MA, PhD	summer
Human Rights and Medicine	5	BA, MA, PhD	summer
International Administrative Law	3	BA, MA, PhD	summer
Literature of French-speaking world	4	MA	summer
Media and migration	6	MA	summer
Philosophy as a Way of Learning	5	BA, MA, PhD	summer
Philosophy of Existence and Medicine	5	BA, MA, PhD	summer
Pragmatics in Czech	5	BA, MA	summer
Psycholinguistics	5	BA, MA	summer
Theory and practice of the European convention on human rights	3	BA, MA, PhD	summer

The Twentieth Century in European Memory: Themes and Approaches in Contemporary European Memory Studies	6	BA, MA, PhD	summer	UHD
The World of Television	6	MA	summer	
Magical Challenges	3	MA/PhD	winter	
Introduction to Psycholinguistics	6	BA	winter	
Introduction to German as a Second Language	4	MA	winter	
Heidelberger Moderne (1910–1933). Comparative Perspectives on a „Weltdorf“	6	MA	winter	
Reading (German title: Lesen)	6	MA	winter	
Language Production in Comparative Linguistics	6	MA	winter	
Introduction to Comparative Literary Studies	4	MA	winter	
Buddhism and popular culture		MA	winter	
U.S. Economic Policy		BA/MA	winter	
Introduction to the Theories and Methods of Linguistics and Translation Studies	2	BA	winter	
Emotions in discourse	8	MA	winter	
Text linguistics and translation (Focus: Italian)	8	MA	winter	
Text linguistics and translation (Focus: French)	8	MA	winter	
Advanced topics in translation studies - Translation quality, critical evaluation and justification of translation decisions	5	BA	winter	
Technical foundations of professional translation I	2	BA	winter	
Translation and Culture - Ideology, evaluative language and intervention in translation	8	MA	winter	
European Linguistics Centre (EZS) Colloquium of the Faculty of Modern Languages: Multilingual perspectives in linguistics	2	MA/PhD	winter	
Montagskonferenz. Public Online Conference at the IÜD		BA/MA/PhD	winter	
Translation in research and professional practice	2	BA/MA	winter	
Current issues in Linguistics and Translation Studies	2	MA	winter	
Advanced Translation II (English to German)	3	BA	summer	
Annotation and Analysis of Speech Acts Patterns in Multilingual Text Corpora	10	MA	summer	
Cosmic Religion - The New Space Race	7	MA, PhD	summer	
Current issues in Linguistics and Translation Studies	2	MA, PhD	summer	

European Linguistics Centre (EZS) Colloquium of the Faculty of Modern Languages: Multilingual perspectives in linguistics	2	MA, PhD	summer	
Evaluation of Machine Translation systems in task-critical domains	10	MA	summer	
Introduction to German as a second language	4	BA, MA	summer	
Introduction to psycholinguistics	6	BA	summer	
Methods and approaches to corpus linguistics, corpus-based lexicography and terminology	8	MA	summer	
Minorities in Japan	10	MA	summer	
Monday's Conference		BA, MA, PhD	summer	
Post-editing	3	MA	summer	
Principles and applications of Machine Translation and corpus-based methods for translators	2	BA	summer	
Research colloquium: Machine Translation applications and evaluation for creative and literary texts	3	MA, PhD	summer	
Semantics, Pragmatics, Translation (French/Italian)	8	MA	summer	
The endocrine system	2	BA, MA	summer	
Wealth, freedom and "American values": Perspectives on philanthrocapitalism in the U.S. from the study of religion	6	BA	summer	
International Commercial and Investment Arbitration	6	BA/MA	winter	
Trade liberalisation and labour rights	6	BA/MA	winter	
Gender Justice	6	BA/MA	winter	
Women in tech: new frontiers of gender-related rights and artificial intelligence	3	BA/MA	winter	
English Culture I and II / Cultura Inglese I e II	6	MA	winter	
Diritto pubblico degli stati europei	9	BA	winter	
Società e diritti globali	6	MA	winter	
Policy Design Analysis & Evaluation	12	MA	winter	
World Society	9	MA	winter	
International Economic Law	6	MA	winter	
Tutela comparata dei diritti	6	MA	winter	

Lingua tedesca LM	6	MA	winter
Lingua spagnola 3 LT	9	BA	winter
Lingua spagnola LM1-LM2	9	MA	winter
Letterature francofone	9	MA	winter
German Linguistics / Linguistica tedesca	9	BA/MA	winter
Teaching German as Foreign language / Didattica della Lingua tedesca	6	MA	winter
Human Development and Mobility in a Changing World	9	MA	winter
Diritto internazionale degli scambi e della proprietà intellettuale	9	BA	summer
English Business Communication	9	BA	summer
Globalization and Cultural Diversity	6	MA	summer
History and politics of North Africa and the Middle East	9	MA	summer
Human Rights At Work in International and Comparative Law	9	MA	summer
International Human Rights Law	9	BA	summer
International Trade Law	9	BA	summer
Political Science	6	MA	summer
Social and Political Attitudes	9	MA, PhD	summer
International human rights and humanitarian law advocacy clinic	6	MA	summer
Anglophone Cultures I and II	9	MA	summer
Anglophone Literatures	9	MA	summer
EU Law on Business and Human Rights	6	BA, MA	summer
European Company Law	6	BA, MA	summer
European Labour Law	6	BA, MA	summer
Lingua italiana e comunicazione	9	BA, MA	summer
Teaching Spanish as A Foreign Language	6	MA	summer
Diritto del commercio internazionale	9	BA	summer
Economic and Social Regulation of Global Workforce		MA	summer
Global Public Policy and Knowledge Society	6	MA	summer
International Economic Law	6	MA	summer
World Society	9	MA	summer

Créations dépayées Artistes, écrivains, cinéastes d'Europe centrale		BA, MA	summer	SU
English B1+ Online	3	BA	summer	
English B2+ Online	3	BA	summer	
English C1 Georgian Cities	3	BA	summer	
"La littérature dans l'enseignement-apprentissage du FLE. Quelle (s) place (s)? Quel (s) usage (s)?"	3	MA	summer	
Le judaïsme et le christianisme dans l'Antiquité: textes et histoire	3	BA	summer	
L'Europe centrale après 1989 / East Central Europe since 1989	3	BA, MA	summer	
Thinking the samizdat, 3. season: Samizdat, what beyond?	3	MA, PhD	summer	
TOEIC Training program	3	BA	summer	
African cultural linguistics	3	MA	summer	UW
Business Communications	4	BA, MA	summer	
Contemporary Rhetoric Studies	3	BA, MA, PhD	summer	
Culture and Politics: Visual Politics (conducted together with the University of Vienna)	4	BA, MA, PhD	summer	
Culture, Democracy, International Affairs through the lens of Area Studies	3	BA, MA	summer	
Geopolitical Tuesday II	4	BA, MA, PhD	summer	
Glottodidactic Teacher's Competencies 2 - The Third Stage of Education	3	MA	summer	
Glottodidactic Teacher's Competencies 3 - The Third Stage of Education	3	MA	summer	
History of English Language and Lexicography	2	BA	summer	
Language and culture teaching in the era of globalisation	8	BA, MA	summer	
Motor control	2	MA	summer	
Other Religions and Beliefs of Asia and Africa 2	3	MA	summer	
Pedagogy (integrated workshops, optional teacher training)	2	BA	summer	
Psychology (integrated workshops, optional teacher training)	2	BA	summer	
Russian ethnicity phenomenon in the internet sources - between high and popular culture	3	BA, MA, PhD	summer	
Russian Foreign Policy Thinking in the post-Communist Era	4	BA, MA, PhD	summer	
Seminar of French social sciences and humanities	4	BA, MA, PhD	summer	

Textology, Orality and Performing Arts in Asia and Africa (lecture and seminar)	6	MA	summer	
The Intermarium states and challenges during the Russian-Ukrainian War	4	BA, MA, PhD	summer	
The sense of body ownership from a cognitive neuroscience perspective	3	MA	summer	
Urban Lab: investigating contemporary city	3	BA, MA, PhD	summer	
Vilnius/Wilno: One City and many Histories	4	BA, MA, PhD	summer	
Virtual exchange: project work	1	MA	winter	
Geopolitical Tuesdays	4	BA/MA/PhD	winter	
Economic data analysis in MS Excel with VBA	3	BA/MA/PhD	winter	
Computable simulation of markets or public policies	6	BA/MA/PhD	winter	
Smart city economics	3	BA/MA/PhD	winter	
Business communication	4	BA/MA	winter	
Theory of mass communication	3	BA/MA	winter	
Design thinking - step by step	3	BA/MA	winter	
Leadership Development Program	3	BA/MA	winter	
Characteristic classes of vector bundles and their applications	6	MA/PhD	winter	
Bilingualism and Multilingualism	8	BA	winter	
Subsidiary Seminar	3	MA/PhD	winter	
Language-and-Culture Teaching in the Era of Globalization	4	MA	winter	
Supportive assessment in the context of the language learning process	4	MA/PhD	winter	
Multilingualism and interculturalism	2	BA/MA/PhD	winter	
Textology, Orality and Performing Arts in Asia and Africa	4	BA/MA/PhD	winter	

Flagship 3

Covid-19 crisis as a model for data literacy	3	BA	summer	CU
Data Analytics for Students of Social Studies and Humanities	3	BA, MA, PhD	summer	
Fundamentals of Discontinuous Galerkin Method	3	BA, MA, PhD	summer	

Nonlinear Optical Spectroscopy	3	BA, MA, PhD	summer
Numerical Linear Algebra for Data Science and Informatics	5	BA, MA, PhD	summer
Simulation and Theory of Biological and Soft Matter Systems II - Interfaces, Self-Assembly and Networks	3	MA	summer
Algorithms for matrix iterative methods	5	BA/M A/Ph D	winter
Approximation of functions 1	5	BA/M A/Ph D	winter
Basics of Molecular Modelling of Drugs	3	BA/M A/Ph D	winter
Continuum Mechanics	6	BA/M A/Ph D	winter
Finite Element Method 1	5	BA/M A/Ph D	winter
High-Performance Computing for Computational Science	5	BA/M A/Ph D	winter
Innovation in the Business Context	2	BA/M A/Ph D	winter
Mathematical Methods in Mechanics of Solids	3	BA/M A/Ph D	winter
Numerical Optimization Methods 1	6	BA/M A/Ph D	winter
Numerical Software 1	5	BA/M A/Ph D	winter
Project Management	2	BA/M A/Ph D	winter
Regularity of solutions of Navier-Stokes equations	3	BA/M A/Ph D	winter
Seminar in Continuum Mechanics	2	BA/M A/Ph D	winter
Simulation and Theory of Biological and Soft Matter Systems I - Biopolymers, Ions and Small Molecules	3	MA	winter

Social Innovation	2	BA/M A/Ph D	winter	
Soil mechanics I	7	BA/M A/Ph D	winter	
Theory of Mixtures	4	BA/M A/Ph D	winter	
Exercer son esprit critique à l'ère informationnelle (Critical thinking in the information age)	3	BA	summer	UniGe
Chemical biology	6	BA/M A	winter	
Introduction to Programming	6	BA	winter	
Introduction to Quantum Science and Technology	4	BA/M A	winter	UHD
Bioinformatics	6	MA	summer	UniMi
Covid-19 crisis as a model for data literacy	3	BA	summer	
Logic of Computation and Information	9	MA	summer	
Policy Design Analysis and Evaluation	12	MA	summer	
Protein Biochemistry	6	MA	summer	
3d video games	6	MA	winter	
Advanced bioinformatics for biotechnology	6	MA	winter	
Advanced Logic	9	MA	winter	
Advanced Multivariate Statistics	6	MA	winter	
Algorithms for massive datasets	6	MA	winter	
Architectures for big data	6	MA	winter	
Artificial Intelligence	6	MA	winter	
Audio Pattern Recognition	6	MA	winter	
Audio Pattern recognition	6	MA	winter	
Bioinformatics	6	MA	winter	
Business information systems	6	MA	winter	
Business process engineering	6	MA	winter	
Data Protection	6	MA	winter	
Environmental geochemistry	6	MA	winter	
Geological Evolution of a Habitable Planet	6	MA	winter	
Groundwater modeling	6	MA	winter	

Heuristic Algorithms	6	MA	winter	
Information Management	6	MA	winter	
Information retrieval	6	MA	winter	
Intelligent systems for industry, supply chain and environment	6	MA	winter	
Logic of Computation and Information	9	MA	winter	
Logistics	6	MA	winter	
Methods for image processing	6	MA	winter	
New generation data models and dbmss	6	MA	winter	
New generation Data Models and DBMSs	6	MA	winter	
Online game design	6	MA	winter	
Probabilistic Logic	9	MA	winter	
Quantitative chemical structure and activity relationship	10	MA	winter	
Real-time graphics programming	6	MA	winter	
Simulation modeling of biomolecules	6	MA	winter	
Simulaton	6	MA	winter	
Social network analysis	6	MA	winter	
Statistical methods for machine learning	6	MA	winter	
Covid-19 crisis as a model for data literacy	3	BA	winter, summer	SU
Thinking AI: Bringing together ethical, legal and social aspects of AI	3	BA, MA, PhD	summer	
ROS and experimental robotics*	6	MA	summer	
Mathematical Epidemiology of Infectious Diseases	12	MA (2nd year), PhD	winter	
Reaction-diffusion equations and the evolution of dispersal	12	MA (2nd year), PhD	winter	
Geometric cobordism and formal groups	6	MA	winter	UW
Geopolitical Tuesdays II	4	BA/M A	winter	
Internet marketing	2	BA/M A	winter	

Modeling of complex biological systems	6	BA/M A	winter	
The Basics of the K-theory of Graph Algebras	6	MA	winter	
Differential Geometry	6	MA	summer	
Internet Marketing	2	MA, PhD	summer	
Modeling of complex biological systems	6	MA	summer	

Flagship 4

Advanced image analysis with focus on - ImageJ, Arivis Vision 4D, SVI Huygens	2	BA/MA/Ph D	winter	CU
Molecular Probes in Biomedical Imaging	3	BA/MA/Ph D	winter	
Grand Challenges in Engineering Geology	5	BA, MA, PhD	summer	
Image analysis and data processing in superresolution microscopy: fairSIM and ThunderSTORM open source systems	2	BA, MA, PhD	summer	
Proteins of Signaling Cascades	3	BA, MA, PhD	summer	
Quantitative Microscopy	3	BA, MA, PhD	summer	
Soil mechanics II	7	BA, MA, PhD	summer	
Focus Bioscience 1: Molecular principles of cancer development	2	MA/PhD	winter	UHD
Focus Bioscience 2: Tumor immunology, virology and cancer	2	MA/PhD	winter	
Advanced Plant Cell Biotechnology	6	MA	winter	UM
Applied biocatalysis	6	MA	winter	
Bio-based innovation in food industry	6	MA	winter	
Biobanking	8	MA	winter	
Economic Botany and Zoology	6	MA	winter	
Environmental Geochemistry	6	MA	winter	
Functional genomics and the molecular basis of differentiation	8	MA	winter	
Isotope Geochemistry and Geochronology	6	MA	winter	
Methods in Biotechnology	9	MA	winter	
Microbial Food Cultures	4	MA	winter	

Molecular Bases of Taste	4	MA	winter	
Molecular pathology and parasitology	8	MA	winter	
Molecular virology	8	MA	winter	
Morphological and molecular basis of the central nervous system and its pathologies	8	MA	winter	
Plants as biofactories	6	MA	winter	
Protein engineering and Proteomics	6	MA	winter	
Applied biocatalysis	6	MA	summer	
Applied entomology	6	MA	summer	
Biobanking	8	MA	summer	
Biotechnologies: experimental models in research	12	MA	summer	
Cultural Diversity and Human Rights Law	6	BA, MA	summer	
Microbial Food Cultures	4	MA	summer	
Molecular Genetics	6	MA	summer	
Molecular pathology and parasitology	8	MA	summer	
Plants as biofactories	6	MA	summer	
Plant Signal Transduction	6	MA	summer	
Protected Cultivation Systems	6	MA	summer	
Protein Engineering and proteomics	6	MA	summer	
Signal Transduction	6	MA	summer	
Green Label	1	BA	summer	SU
Green Label I	1	BA (2nd year)	winter	
Green Label II	2	BA (3rd year)	winter	
Strategic Management and Intrapreneurship	2	BA (3rd year)	winter	
Astrogeobiology	2	BA, MA	summer	UW
Specialisation seminar (proseminar) - legal determinants of energy, climate, and environment	5	MA	summer	
Underwater Archaeology	3	BA, MA	summer	
Climate Change	3	MSc	winter	
Environmental Analysis	1, 5	MA	winter	
Marine Microplastics: from the anthropogenic litter to the plastisphere	1, 5	BA/MA/Ph D	winter	

Medicinal Herbs	2	BA/MA	winter	
Seminar of French social sciences and humanities / Séminaire français de Sciences Humaines et Sociales	4	BA/MA	winter	
Spatial Planning and Sustainable Regional and Local Development	3	MA	winter	
Spring School "The Making of EU Environmental Regulation - Processes, Actors, and Tools of Implementing the Climate Action strategy of the European Green Deal"	6	BA/MA	winter	
Use of i-Tree tools in urban greenery management	3	BA/MA	winter	