



ATiENA

**Bringing Accessibility and Design for
All into Higher Education Curricula**

Work Package 2

Focus Groups and Co-Design Sessions Report



Co-funded by
the European Union



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Executive Summary

This document is part of ATHENA's project Work Package 2 (WP2)
"Recommendations on the integration of accessibility and universal design in higher education (HE) curricula".

Section 1: Focus Groups

This section details the focus groups conducted under Task 2.1 to explore how to integrate accessibility and universal design principles into HE curricula. Before these focus groups, a desk review of existing regulatory frameworks across European countries was carried out, with findings included in Annex 1.1.

The focus groups were divided into two types:

1. Shared Skills Across Areas of Knowledge
2. Specific Areas of Knowledge

These discussions, held in various European countries, followed a human-centric methodology. This section also includes the results of an expert consultation conducted alongside the focus groups.

Key findings address:

- How to integrate accessibility in academic programmes
- Relevant knowledge, skills, and competences
- Student evaluation methods
- What to include in the recommendations document
- Potential learning outcomes

These findings culminate in a final set of recommendations, available in Deliverable D2.2: "Recommendations and Sample Courses."

Section 2: Co-Design Sessions

Section 2 focuses on co-design sessions with educational leaders and accessibility experts, conducted under Task 2.2 to develop tangible course proposals for selected degrees. After outlining the methodological approach, this section presents the session reports and their outcomes.

The output of the co-design sessions is a series of sample courses, available in Annex 3.2 and Deliverable D2.2. "Recommendations and Sample Courses."

Abbreviations

CRPD	Convention on the Rights of Persons with Disabilities
D2.1.	Deliverable 2.1. “Focus Groups and Co-Design Sessions Reports”
D2.2.	Deliverable 2.2. “Recommendations and Sample Courses”
FG	Focus Group
HCI	Human Computer Interaction
HE	Higher Education
ICT	Information and Communication Technology
QA	Quality Assurance
SDG	Sustainable Development Goals
STEAM	Science, Technology, Engineering, Arts and Mathematics
UI/UX	User Interface / User Experience
WP	Work Package

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Introduction

This document has been produced as part of ATHENA project funded by European Education and Culture Executive Agency - EACEA Erasmus+, EU Solidarity Corps A.2 – Skills and Innovation, which focuses on the integration of accessibility and universal design in higher education (HE) curricula. Although highly relevant, the project does not focus on how to support students with disabilities in HE but on how to embed accessibility and universal design as cross-cutting elements within HE curricula across diverse disciplines.

The present document is divided into two main sections. Section 1 details the findings from a series of focus group (FG) sessions, including those related to shared skills and specific areas of knowledge, followed by a section on key findings.

The focus groups on shared skills involved discussions held in four focus groups conducted by academic partners from Austria, Cyprus, Czechia, and Spain. These groups explored common skills and assessment methods applicable across various disciplines, with contributions from experts in different fields, providing a comprehensive view on how shared skills can be integrated into HE programmes.

The focus groups on specific areas of knowledge focused on how accessibility and universal design principles can be embedded in higher education curricula across five key disciplines, identified following WP1 domains. Each partner country conducted focus groups relevant to a specific domain:

- **Arts and Humanities** (UAB, Spain)
- **Engineering and Architecture** (Masaryk University, Czechia)
- **Health Sciences** (EDF, Belgium)
- **Science, specifically Computer Science** (JKU, Austria)
- **Social Sciences and Law** (EUC, Cyprus)

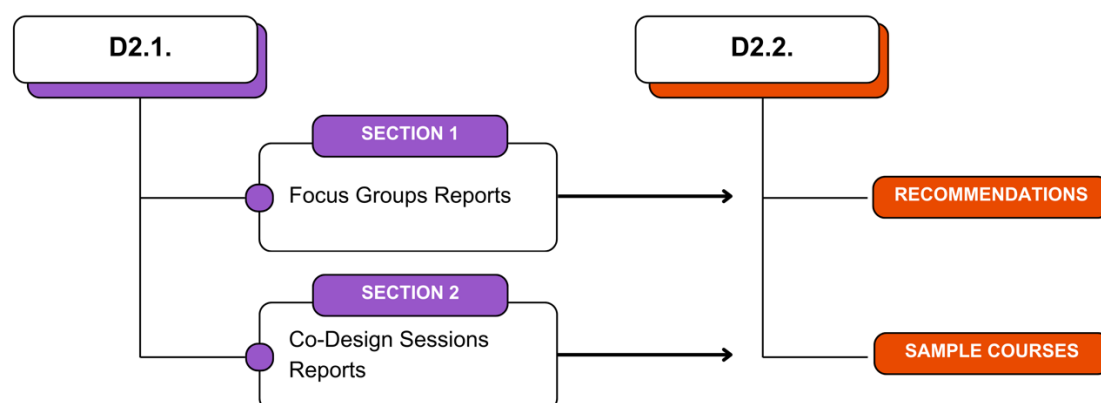
These sessions included a wide range of participants, such as accessibility and HE experts, students, end users with disabilities, and programme/course coordinators. Additionally, a consultation with experts was conducted by EURASHE.

The key findings section provides an analysis of the discussions from both the shared skills and specific areas of knowledge focus groups, highlighting several significant conclusions on the integration of accessibility and universal design into higher education curricula. Key topics include: a) the integration of accessibility in academic programmes; b) necessary knowledge, skills, and competences; c) student evaluation methods; d) recommendations for curricula, and e) potential learning outcomes.

Section 2 focuses on a series of co-design sessions, with detailed reports from each session. These sessions aimed to collaboratively develop sample courses that integrate accessibility and universal design principles across different HE disciplines.

The relationship between Deliverable D2.1, "Focus Groups and Co-design Sessions Report," and Deliverable D2.2, "Recommendations and Sample Courses," is illustrated in Figure 1 below.

Figure 1. Relation between D2.1. and D2.2.



The document also includes three annexes. Annex 1 contains a desk review, providing an overview of the current state of accessibility and universal design in HE across Europe. Annex 2 compiles all documents related to the focus group sessions, including the protocol and templates used. Annex 3 includes the documentation for the co-design sessions as well as the sample courses developed during these sessions.

SECTION 1. Focus Groups Reports

Section 1 of this document presents the findings from a series of focus groups conducted in five countries (Austria, Belgium, Cyprus, Czechia, and Spain), exploring how accessibility and universal design can be integrated into higher education curricula. This phase is linked to Task 2.1 of the project, which aimed to develop recommendations on incorporating accessibility and universal design principles into HE curricula. The full set of recommendations can be found in D2.2. “Recommendations and Sample Courses.”

Methodology

All focus groups conducted as part of the WP2 within the ATHENA project followed a comprehensive methodology to ensure the collection of valuable insights from participants while maintaining ethical standards and data confidentiality. UAB prepared a standardised protocol, shared with all partners, to maintain consistency across focus groups (see Annex 2.1) and a template to be completed after the sessions (see Annex 2.2. and Annex 2.3). A total of 9 focus groups were conducted, with 4 focusing on shared aspects across areas of knowledge and 5 on specific areas of knowledge. The focus groups lasted 75-90 minutes and were conducted online in February and March 2024. Additionally, one consultation with experts was carried out in written format.

Participants

The participant selection process was meticulous, aiming for a balanced representation of accessibility experts, HE experts, programme/course coordinators, students, and end users. Each focus group consisted of 4–7 participants. All participants provided basic demographic information by completing a brief questionnaire before each session. A total of 24 participants joined the 4 FG sessions addressing shared skills across areas of knowledge. Each FG intentionally combined participants from diverse areas of expertise to encourage interdisciplinary perspectives. The demographic data can be consulted in Table 1 below.

Table 1. Demographic data of participants who joined FGs on shared skills

	Number of participants	Years of experience	Attendees involved in activities or projects related to accessibility	Attendees with a leadership role

Austria	5 (4 female)	Between 5 and 20	2	4
Cyprus	6 (2 female)	Between 1 and 32	5	3
Czechia	6 (4 female)	Between 3 and 22	6	3
Spain	7 (6 female)	Between 4 and 34	5	5

A total of 23 participants joined the 5 FG sessions addressing specific areas of knowledge. Each academic partner conducted one focus groups, with EDF also participating as an additional collaborator for Belgium. The demographic data can be consulted in Table 2 below.

Table 2. Demographic data of participants who joined FGs on specific areas of knowledge

	Number of participants	Years of experience	Attendees involved in activities or projects related to accessibility	Attendees with a leadership role
Austria	4 (2 female)	Between 4 and 35	3	3
Cyprus	3 (3 female)	Between 14 and 30	2	2
Czechia	5 (1 female)	Between 5 and 40	3	2
Spain	5 (4 female)	Between 7 and 27	3	3
Belgium	6 (5 female)	Between 7 and 20	5	5

Focus Groups on shared skills

A first series of focus group discussions on shared skills and assessment with experts from different areas of knowledge were conducted. In this context, 4 focus groups were carried out, one per academic partner.

Austria (Johannes Kepler University, JKU)

The focus group carried out by JKU took place the 4th of March 2024 and lasted 75 minutes, 15 minutes longer than originally planned due to the breadth of the topic. The session was conducted online using Zoom. At the beginning, it was emphasised

that the focus was on the implementation of accessibility and universal design in curricula, and not on the provision of accessible programmes for students.

Regarding the definition of accessibility and universal design, the ATHENA team provided pre-defined definitions and asked for participants' opinions, thus focusing this part of the discussion as it was not the primary focus of the group. One participant pointed out that it is not only important that technologies are accessible, but also that these accessible technologies are financially/economically accessible for the target group.

As most of the participants were higher education experts with a focus on the organisation and implementation of study programmes, curricula and teaching, the focus group concentrated on the question of how accessibility can be embedded in curricula in terms of higher education policy, but also in terms of organisational development. However, it was more difficult to agree on cross-disciplinary recommendations on accessibility, as fewer accessibility experts participated.

As the discussion progressed, consensus emerged on the following topics:

Integration of accessibility and universal design in academic programs

- Teaching accessibility is critical because society needs experts to implement accessibility effectively. The “Teach Access” initiative in the US is an example of how educational institutions, the technology industry, government, and disability advocates are working together to teach digital accessibility. However, this initiative is expanding beyond digital accessibility to include architecture, education, and curriculum implementation due to the growing demand for industry professionals.
- Embedding accessibility into curricula requires a comprehensive analysis of the current situation, including identifying experts in universities and assessing where similar content is already being taught at university. There is a need to ensure that there are enough qualified lecturers available and at what academic level the subject can be taught.
- Clarification of teaching content requires the involvement of relevant stakeholders in higher education policy, with strong commitment and engagement. The role of study commissions and the importance of various bodies such as the rectorate, senate and curriculum review committees need to be considered.
- It is important to build alliances and do a lot of lobbying to gain the support of stakeholders and to promote the integration of accessibility issues into university statutes. In Austria, where performance agreements are negotiated between the Ministry of Education, Science and Research and universities,

and where international reports such as the UN Disability Report are taken into account, this can be beneficial for lobbying.

- As a project team without hierarchical power or authority to give directive, the implementation of a "pilot curriculum project" could be considered, involving chairs of study committees to test feasibility and acceptance. The decision to make the courses compulsory or voluntary will also have an impact on their acceptance by study committees.
- It would be desirable to embed accessibility awareness in university statutes or curricula, similar to what is already done for issues such as social development goals and gender.
- An anchoring in laws and statutes as well as the development of concrete measures for implementation and awareness-raising are crucial for the success of the integration of accessibility in curricula: A clear provision in the University Act (Universitätsgesetz) would be an effective lever for embedding accessibility in research and teaching at universities. The Universities of Applied Sciences Act, for example, explicitly provides for equal treatment and requires the development of equal treatment plans, which leads to increased awareness to the issue. If it is then included in the statutes, it should be part of research and teaching.
- However, once it is included in the statutes, there are also new challenges in terms of implementation, e.g. in terms of financial resources.

Knowledge, skills, and competences

- Accessibility and universal design should be integrated into the curriculum as transversal topics, whereby the content must be subject-related and subject-specific to establish a direct link with the respective subject areas.
- Accessibility can be taught in various disciplines, with the focus varying depending on the discipline. In architecture, the focus is on compliance with building standards for accessibility. In law, legal provisions such as the Equality Act are dealt with. Computer science focuses on standards such as EN301549 and their further development to ensure digital accessibility. In economics, the focus is on the economic impact of accessibility, weighing up the short-term costs against the long-term benefits as an investment in the economy and society. The social sciences analyse the socio-political and socio-economic consequences of accessibility for the target group.
- It is important that students develop an awareness of accessibility, even if not all of them need to actively apply this knowledge.
- It can be difficult to treat accessibility and universal design as stand-alone topics that do not have a clear link to the subject area. However, if accessibility becomes a compulsory course, this can help to promote inclusion and consider the needs of people with impairments.

- On the other hand, it has a different quality if students are regularly confronted with accessibility and learn to consider the needs of this group of people. A practical proposal for the integration of accessibility is an obligation to submit accessible documents, including seminar papers, bachelor's and master's theses and dissertations. This could, for example, be taught as part of an academic writing course.
- Accessible documents represent a mini adaptation that affects all students and lecturers and encourages engagement with accessibility. This can help to develop a greater interest and understanding of why accessibility should be anchored in the curriculum in the long term.
- This would be a first step towards building awareness for accessibility and implementing this across the university. It should then be discussed whether it makes sense to deal with accessibility in greater depth and how this can be implemented in the curriculum.
- A course that includes content such as the UN Convention on the Rights of Persons with Disabilities or the Web Accessibility Act in all curricula could be a possibility. The method of user centred design could also be content.
- In all subjects where human-computer communication is involved, it would be desirable for accessibility to be taught and anchored in the curricula.

Incorporation of accessibility and universal design into learning outcomes

- The learning outcomes in Austria have not yet been implemented in the way that would be desirable. There is still no clear number or specification for the formulation of learning outcomes. As an alternative, the number of ECTS credits could be used as a measure of scale.
- A learning objective could be that students develop interdisciplinary discourse skills, including interdisciplinary communication skills, to facilitate discussion about accessibility. Problems and issues should be seen from different perspectives and different disciplines should be able to work together to develop solutions. This requires the ability to translate specialist terminology between different disciplines, as well as a common basic understanding and communication of relevant issues from different perspectives.
- An example of an interdisciplinary approach are the bachelor's and master's degree programmes "Disability and Diversity" and "Disability, Diversity and Digitalisation" at the Carinthia University of Applied Sciences: The programme covers various aspects of the development and use of technology in relation to disability and diversity. Students acquire knowledge about the social and cultural impact of technology, in particular regarding social robotics, service robotics in care and communication options for people with disabilities, the elderly or people with dementia. Students are also introduced to programming and building small technical devices and undertake research projects to

develop and evaluate assistive technologies. The research method of user-centred design is used to ensure that the technologies meet the needs of the users. In addition to the technological aspects, social and cultural aspects are also taught, including legal issues such as privacy and security of technological solutions. The programme also discusses how technology can support user empowerment and autonomy. Technology impact assessment will be carried out at various levels, including using the MESTA model (Model for the Evaluation of Sociotechnical Arrangements).

Cyprus (European University Cyprus, EUC)

The focus group carried out by EUC (Cyprus) took place on 20th February 2024 in online format, through Blackboard Collaborate. It lasted 90 minutes and covered all planned topics. Given that some participants had prior commitments and needed to depart before the end of the session, the main agreed-upon conclusions were summarized before they had to leave the session.

Participants were highly engaged throughout the session, actively contributing to discussions. However, they tended to digress on debating support services for students with disabilities, detracting from the intended focus on curriculum, skills, competences, and learning outcomes. To realign the discussion, the moderator intervened multiple times.

Participants showed a preference for discussing guidelines and requirements for accommodating HE students with disabilities rather than integrating accessibility into curricula. Additionally, there was a lack of distinction between BA and MA degree programs, despite efforts by the moderator to highlight this difference. Moving forward, future discussions should emphasize the differentiation between BA and MA programs for better integration of accessibility and universal design.

It appears that changes in these issues in Cyprus are often driven by individuals with relevant expertise who foster multidisciplinary collaborations and networking, or by personal interests.

An IT Officer suggested contacting the Cyprus Productivity Center for information on skills programs for persons with disabilities, offering a valuable avenue for further exploration.

As the discussion progressed, consensus emerged on the following topics:

The evolution of accessibility and universal design

- Accessibility is connected to equal opportunities, rights, and experiences for all.
- Accessibility should be an important factor when authoring programs and conducting research. Technology is a decisive element in these, thus, centres and interested parties need to have access to relevant resources.
- Universal Design is universal design, meaning that what is useful for one can be useful for all.
- Universal Design is defined as a common template in web design, that removes barriers and encompasses consistency and simplicity in navigation.
- Universal Design is also considered in relation to the design of the curricula to accommodate all learners in higher education. This was a reflection that penetrated the discussion, despite the efforts of the moderator to return to the interview protocol questions.

Integration of accessibility and universal design in academic programs

- The participants acknowledged that in many courses, diversity is mentioned, but not disability and accessibility.
- Such topics are touched upon in the course “Interaction Design” of the Interaction Design MA at Cyprus University of Technology. Nevertheless, the incorporation of these topics is due to the personal interest of the academics and their affiliation with experts who inspire change, and not because it is required.
- Human Co-learning Function is a course in an ICT BA program that, to some extent, analyses accessibility issues.
- Universal Design appears in the educational philosophy employed for the training of academic staff who teach in distance learning programs in one of the universities in Cyprus.
- Lack of awareness is emphasized. Awareness is considered as a prerequisite for anything else.
- Participants received no relevant education on accessibility, with some of the academics developing accessible environments because they want to facilitate the understanding of the educational material. Thus, the beginning of their involvement with accessibility has been rather random and has been related to academic and professional acquaintances they have, and which inspired some changes.
- In research programs, partners from other countries sometimes seem to have an interest in ensuring the accessibility of the outputs of the project.
- According to participants, accessibility issues have not been raised by committees that evaluate academic programs.

- If a course is accessible, it constitutes an example for the students on how they can create accessible content themselves, thus, serving as a learning experience (learning by doing and by example).

Knowledge, skills, and competences

- Basic digital skills are necessary for all graduates in all professions.
- Knowledge and skills for AT are very important for all professionals.
- General awareness regarding accessibility and Universal Design issues is critical.
- Basic standards for accessible documents (e.g. fonts size, type, contrast, basic accessibility of images) are necessary.
- Accessible PDF documents are important, but also e-Pad documents.
- The use of simulations of disability in developing disability and accessibility awareness and experience was mentioned - [Researchers' note: this was stated by participants though the research team acknowledge the criticism around disability simulations].

Incorporation of accessibility and universal design into learning outcomes

Participants did not mention any specific learning outcomes that can be integrated in Higher Education curricula, but they mentioned objectives for the students as outlined in the previous section *Knowledge, Skills and Competences*:

- Awareness
- Development of basic digital skills
- Development of skills for basic documents accessibility

Recommendations for integrating accessibility into curriculum design

- There should be an introduction to the basics of accessibility, with a shift of focus to a range of disabilities (currently, there is too much focus on visual disability) in the form of a course. This should include regulations, UNCRPD, services in national context, at university level, etc.
- User involvement in the development of the curricula is crucial.
- Courses are necessary to raise awareness and common understanding of Universal Design. Also integrated accessibility is important in ways that constitute examples and motivate students to implement accessibility later in their careers.
- Accessibility should be included in ICT, Sociology and Psychology BA programs.

- Professional development for instructors is important to integrate accessibility in the courses. This is not only to make their courses accessible but also to add issues of accessibility in their course outlines and curricula.
- The actual programs also need to be accessible, e.g. easy to read.

Agreed potential learning outcomes

Participants did not mention any specific learning outcomes that can be integrated in HE curricula, but they mentioned objectives for the students as outlined in the section *Knowledge, Skills and Competences*:

- Awareness
- Development of basic digital skills
- Development of skills for basic documents accessibility

Czechia (Masaryk University)

The focus group carried out by Masaryk University (Czechia) took place on 6th March 2024 in online format, via Zoom. It lasted 75 minutes (as was planned) and covered all planned topics. At the beginning, it was emphasised that the focus was on the implementation of accessibility and universal design in curricula, and not on the provision of accessible services/ programmes for students. Throughout the session, all participants demonstrated a high level of engagement, contributing actively to discussions.

As the majority of the participants were higher education experts with a focus on the organization and implementation of study programmes, curricula and teaching, and with extensive experience in the field, the focus group concentrated on the main goal of the session: to discuss the inclusion of accessibility and universal design in higher education curricula with other experts from different areas of knowledge.

Participants were also able to formulate several learning outcomes and found consensus on them.

As the discussions progressed, consensus emerged on the following topics:

Integration of accessibility and universal design in academic programs

- Accessibility is key to ensuring everyone has equal opportunities, rights, and experiences.
- In the development of software and research activities, considering accessibility is crucial because technology plays a critical role. Access to appropriate resources for centres and stakeholders is necessary.

- Universal Design advocates for creating solutions that benefit everyone, suggesting that what helps one person may be beneficial to all.
- In web design, Universal Design serves as a standard approach that eliminates obstacles, promoting easy and consistent navigation.
- This concept extends to educational curriculum design, aiming to support all students in higher education, a topic that surfaced in discussions despite attempts to stick to set interview questions.
- The incorporation of accessibility as a cross-disciplinary subject in all fields and levels of education (undergraduate and postgraduate) is advocated. Initially, it might be practical to introduce this as a dedicated course led by experts in accessibility, alongside training for all teaching staff, to eventually integrate accessibility fully into all aspects of the curriculum.
- Training educators in accessibility is critical for its effective inclusion in teaching methods and course content.
- A broad and inclusive understanding of accessibility principles is essential in all fields of expertise.
- Incorporating accessibility into academic programs necessitates a thorough examination of the existing conditions, pinpointing university specialists in the field, and evaluating existing courses that cover related material. It's important to verify the availability of adequately trained instructors and determine the academic level at which the subject should be introduced.
- It would be beneficial to integrate awareness of accessibility into university statutes, regulations/ measures or course syllabi, akin to the existing integration of subjects like social development objectives, sustainability or gender issues.
- Treating accessibility and universal design as separate subjects without an apparent connection to the field can be challenging. Nonetheless, making accessibility a mandatory part of the curriculum could enhance inclusivity and consider the requirements of individuals with disabilities. Examples of best practices might be some courses at Masaryk University, such as pan-university course on Universal design - inclusion of alterity – accessibility, or the course Digital design without barriers.

Knowledge, skills, and competences

- Cultivating an understanding of accessibility is crucial for students, regardless of whether they will directly use this knowledge in practice.
- Lack of (general) awareness was often emphasized. Awareness is considered as a prerequisite for anything else.
- Participants lacked formal training in accessibility, leading to their initial engagement in the field being somewhat incidental and influenced by academic and professional contacts who prompted them to make changes.

- That's why accessibility and universal design principles were considered at Masaryk University during the BA program Information Services Design development and delivery.
- Some generally applicable principles can be key to understanding the meaning and importance of accessibility (accessible presentation, creating accessible documents).
- Digital accessibility and technologies are involved in many spheres of life. Therefore, in any field that involves interaction between humans and computers, it's important that accessibility principles are integrated and emphasized within the educational curricula.

Incorporation of accessibility and universal design into learning outcomes

- Learning outcomes should aim to foster an inclusive approach and tangible skills for tackling various accessibility issues in actual scenarios.
- Two approaches were discussed: (1) Integrating accessibility and universal design into existing learning outcomes across various disciplines; (2) as well as one learning outcome fully dedicated to accessibility and universal design.
- Learning outcomes should reflect the maturity of students – for BA should be basic, for MA advanced.

Recommendations for integrating accessibility into curriculum design

- Involving users in the curriculum development process is essential.
- As the general awareness of accessibility is still relatively low in Czechia, introductory courses on accessibility and universal design should be the basis.
- In areas where teachers subsequently register an interest in a more detailed insight into this topic, it will be appropriate to prepare advanced courses.
- Linking courses to practice is very important - learning about the practical implications of accessibility can help generate interest in this topic.
- According to the experience of some participants, it is advisable not to forget the involvement of people with disabilities in the role of lecturers or practitioners of such courses.
- Making existing programmes accessible can also be a good way to demonstrate the importance of accessibility.

Agreed potential learning outcomes

BA

- Foundational Understanding of Accessibility Principles: Students will demonstrate a comprehensive understanding of accessibility and universal

design principles, recognizing their importance in creating inclusive environments, digital platforms, and services that cater to the diverse needs of all users, including those with disabilities.

- Critical Analysis of Current Practices: Students will critically analyse current design, development, and implementation practices in their field of study, identifying barriers to accessibility and proposing viable solutions to overcome these challenges, fostering inclusivity.

MA

- Research and Innovation in Accessibility: Students will conduct original research on accessibility challenges and innovations, contributing new knowledge to the field and developing novel solutions to improve inclusivity in their area of expertise.
- Evaluation and Iterative Design for Accessibility: Students will master the skills to critically evaluate the accessibility of systems and environments, employing iterative design and feedback mechanisms to continuously improve inclusivity based on user experience and changing standards.

Spain (Universitat Autònoma de Barcelona, UAB)

The UAB (Spain) focus group, conducted online via Teams meeting on February 12, 2024, was originally scheduled for 60 minutes but extended to 90 minutes due to the depth of discussion. To accommodate participants with prior commitments, a document summarizing conclusions was distributed for feedback after the session.

During the discussion, participants often deviated toward support services for students with disabilities, necessitating moderator intervention to refocus on curriculum, skills, competencies, and learning outcomes. Notably, there were no distinctions between BA and MA programs, despite the moderator's efforts to highlight this differentiation. Future discussions should emphasize more the differentiation between BA and MA programs to properly tailor accessibility and universal design integration.

As the discussions progressed, consensus emerged on the following topics:

Integration of accessibility and universal design in academic programs

- Accessibility should be treated as a transversal topic across all areas of knowledge and degree programs (both BA and MA). However, as it might be difficult at the beginning, an idea could be introducing them as a single general subject facilitated by accessibility experts, while training all faculty

members to ensure that after a certain period of time accessibility is fully integrated throughout the curriculum.

- Training the trainers is essential for the effective integration of accessibility into course content and teaching methodologies.

Knowledge, skills, and competences

- A collective comprehensive knowledge in accessibility principles is needed across all areas of knowledge.
- Learning outcomes should focus on promoting an inclusive mindset and practical competencies to address diverse accessibility challenges in real situations.
- Student evaluation should incorporate practical scenarios mirroring real-world situations, fostering critical thinking and problem-solving skills related to accessibility.

Incorporation of accessibility and universal design into learning outcomes

- It is recommended to integrate both concepts into existing learning outcomes across various disciplines (similar to how the gender perspective was integrated across the HE curriculums), rather than creating entirely new learning outcomes.
- One participant said that it would be desirable to have at least one learning outcome fully dedicated to accessibility and universal design.

Recommendations for integrating accessibility into curriculum design

- Recommendations should be specific and practical, supported by real examples and multimedia aids to facilitate comprehension.
- Sharing both successful and unsuccessful implementation experiences is crucial for collective learning and continuous improvement in accessibility integration.
- Direct engagement with individuals with disabilities through dedicated sessions can provide valuable insights into their needs and experiences, enabling curriculum adjustments that genuinely address accessibility concerns.

Agreed potential learning outcomes

- To understand the basic concepts and historical development of societal responses to diversity, particularly in the context of accessibility, and apply this understanding to professional practice.
- To identify the diverse accessibility needs of users across various profiles within specific professional contexts.

- To demonstrate effective communication skills tailored to the accessibility requirements of diverse users.

Focus Groups on specific areas of knowledge

A second series of focus group discussions were organised to discuss the integration of accessibility and universal design principles within higher education curricula across different fields. Each academic partner conducted one focus groups, with EDF also participating as an additional collaborator for Belgium. Taking WP1 domains as a basis, 5 areas of knowledge were selected: Arts and Humanities (UAB), Social Sciences and Law (EUC), Science (encompassing Computer Science, JKU), Health Sciences (EDF, Belgium), and Engineering and Architecture (Masaryk University) (see Table 3 below). These discussions involved not only accessibility and Higher Education (HE) experts but also engaged students, end users, and program/course coordinators.

Table 3. Relationship between WP1 domains and W2 areas of knowledge

WP1	WP2
Education	Social Sciences, Education, and Law (EUC)
Arts and Humanities	Arts and Humanities (UAB)
Social Sciences, Journalism, and Information	Social Sciences and Law (EUC)
Business, Administration and Law	Social Sciences and Law (EUC)
Information and Communication Technologies	Science (JKU)
Engineering, Manufacturing, and Construction	Engineering and Architecture (MU)
Health and Welfare	Health Sciences (EDF)

Arts and Humanities (UAB)

The focus group carried out by Universitat Autònoma de Barcelona (Spain) took place on February 22, 2024, in online format, as a Teams meeting. It aimed at discussing the integration of accessibility and universal design principles within higher education curricula in the field of Arts and Humanities. During the session, the timing was efficiently managed, starting with brief introductions to ensure a shared understanding among participants. While not focusing extensively on defining accessibility and universal design, efforts were made to align perspectives and optimize discussion depth. Periodic summaries were provided to ensure coherence, and the moderator adjusted discussion flow for efficiency. Conclusions were shared

in written form, fostering high participant engagement and a productive exchange of ideas.

Participants agreed on the following topics:

The evolution of accessibility and universal design

- Participants understand these terms following the principles outlined in the United Nations Convention on the Rights of Persons with Disabilities.
- Participants acknowledge that the concept of accessibility has evolved over time to accommodate the changing needs of society. It refers to a dynamic, bidirectional, and participatory process that engages all stakeholders.
- Universal design advocates for flexible adaptations based on its own definition.

Integration of accessibility and universal design in academic programs

- Raising awareness and training the trainers is needed to better integrate accessibility in all academic programs.
- It is important to consider the thematic focus of individual courses within academic programs. Perspectives that emphasize the interaction between students and individuals with disabilities from a respectful and integrative point of view could be integrated as a transversal competency across various BAs.
- Regarding specific subjects, it was noted that there is currently no dedicated accessibility course within the Design BA. However, there is an interest in creating a course on social design to explore how to create products that serve end-users needs within social contexts. In the Fine Arts BA program, some courses theoretically address diversity, although specific attention to accessibility may be lacking. Conversely, in the Translation BA program, there is a course titled "Introduction to Technologies," which delves into the application of digital accessibility in text documents (e.g., alternative text, headings, color contrast, and accessibility checks).

Transversality of accessibility and universal design

- A recommendation is to integrate accessibility and universal design into existing subjects using the legal framework and mirroring the approach taken with the gender perspective.
- Basic accessibility knowledge could be introduced in an optional course or in a university introductory course, as the one which already exists in certain universities such as Universitat Pompeu Fabra in Barcelona.

- It is essential to identify which learning outcomes are pertinent to each degree. Not all students may need specialized skills like subtitling, but they all need to understand its importance as an accessible solution.

Knowledge, skills, competences, and learning outcomes

- Students should know who the final users of their work and projects will be, enabling them to create content suitable for diverse profiles and contexts.
- Acquiring basic notions about the communication needs of people with disabilities and awareness of available services is crucial for students, applicable to their works or projects.
- Students should develop skills related to their commitment to social reality, a matter that also includes accessibility aspects.
- To address shared elements in Arts and Humanities studies while accommodating specific BA requirements, two approaches could be considered: a) integrating a cross-disciplinary learning outcome focused on social awareness and diversity, and b) incorporating specific content within subjects adapted to each BA's needs.
- It is necessary to include at least one subject on accessible communication in communication-related degrees.
- There is a suggestion to use alternative terms such as “diversity” rather than “accessibility” or “universal design”.

Student evaluation

- Assessment criteria are dependent on the learning outcomes being evaluated. This means considering various levels of assessment, ranging from a broad understanding of accessibility and universal design to the specific evaluation of learning outcomes within some courses.
- In the context of Translation Studies, evaluating the quality of the service provided is a feasible approach.

Ideas for the document on recommendations

- Recommendations should be categorized by discipline, providing specific examples of how accessibility and universal design can be applied in each area.
- Recommendations should reach both program coordinators and lecturers directly. Additionally, engaging quality agencies and involving students in the process could be considered. The approach and wording should be tailored to each of these target audiences to maximize effectiveness.
- Recommendations should include clear definitions of accessibility and universal design for those who may not be experts in the field.

Agreed learning outcomes

- Translation Studies: Students will be able to recognize the communicative and cultural needs of a diverse society and effectively respond to these needs within various contexts.
- Translation Studies: Students will be able to apply basic knowledge about digital accessibility in documents to address the needs of a diverse society.
- Philology Studies: Students will be able to identify the diverse needs of students in their classroom and look for the necessary resources to create an inclusive learning environment.

Social Sciences and Law (EUC)

The focus group carried out by European University Cyprus (Cyprus) took place on February 20, 2024, in online format, through Blackboard Collaborate. It aimed at discussing the integration of accessibility and universal design principles within higher education curricula in the field of Education Sciences (under the broader area of Social Sciences). During the session, the timing was carefully managed, allowing for a smooth progression of discussions. Unlike the shared group, where participants occasionally veered off-topic, this specific group, comprised of academics more involved in teaching accessibility issues, maintained focus. The session began with brief introductions to ensure a shared understanding among participants, with emphasis on curriculum and the definition of accessibility and Universal Design. Throughout, efforts were made to ensure coherence, with periodic summaries provided by the moderator to guide discussion and enhance comprehension. Overall, participants demonstrated high engagement, contributing to a productive exchange of ideas.

Participants agreed on the following topics:

The evolution of accessibility and universal design

- Participants understand the terms Universal Design and accessibility following the notion of “All”.
- They made references to Universal Design for Learning.
- Participants deem awareness to be of utmost importance. They consider accessibility to be an issue that people in Education do not usually take into consideration due to lack of expertise and lack of contact with persons with disabilities.
- Although not very familiar with the background and literature on Universal Design, it seems that participants understand this as a framework providing a set of tools that facilitate learning design and delivery according to each

student's needs and as a toolkit that people can learn to use according to each student's needs.

- The importance of built environment, information, services and products was also emphasized.
- The importance of Universal Design was stressed specifically in the context of technological advancement. In fact, these concepts were taken into consideration in the design of the postgraduate program "Technologies of Learning and Communication and STEAM" at EUC, despite the fact that the central emphasis of the program is not directly related to the concept of accessibility and disability.
- In addition, some definitions were provided based on the provision of accessible services to the students. Nevertheless, the moderator made sure that the discussion would not linger on this aspect of accessibility, and the participants were able to adapt accordingly.

Integration of accessibility and universal design in academic programs

- The basis of Universal Design for Learning was identified as being very close to the basics of Mathematics educational programs, thus, integration does already exist.
- The postgraduate program "Technologies of Learning and Communication and STEAM" includes learning outcomes and content with notions of Universal Design and accessibility.
- Regarding specific subjects, it was noted that introductory courses in Inclusive Education programs pertain to the social model of disability, also including notions of universal design and accessibility, often connecting that to differentiation of instruction. Emphases included in these courses refer to removing barriers, the importance of accessibility and disability services, and notions of Universal Design. However, experts stressed the need for collaboration with other programs and also with other courses within the same program, highlighting the importance of a cross-disciplinary approach to teaching about accessibility. In fact, it was widely accepted among the participants that impact is larger if the relevant concepts (e.g. technology issues in general, including those related to accessibility) are included in all courses within a program.
- It was unanimously accepted that instructors and other professionals should be given opportunities for professional development on how to integrate the more general ideas of accessibility and Universal Design in their courses.
- The training of professionals on integrating these concepts in their courses is not easy, and an approach of good practices would be helpful in this respect. It should be kept in mind that this training should be short and impactful, due to professionals' limited time.

Transversality of accessibility and universal design

- In order to implement results regarding accessibility and Universal Design of Learning in the instruction of different fields, differentiated guidelines should be given regarding each field (e.g. Technology, Mathematics, Physics, etc). However, regarding specific tasks (e.g. digital learning environments) the involvement of accessibility experts is necessary.
- There are also some general conclusions regarding courses that are not dedicated to accessibility. Experts agreed that students should be able to identify barriers, look for and suggest solutions to these barriers, and even design accessibility solutions to overcome those, including designing the steps towards change.
- In addition, students should have the opportunity to evaluate and compare existing examples on accessibility, including materials, webpages, policies, and practices.
- Important notions of these concepts could be included in a course that discusses contemporary issues of the topic the course focuses on.

Knowledge, skills, competences, and learning outcomes

- Regarding the number of objectives dedicated to accessibility, there should be overall at least one learning outcome in a program of study, and up to 4 objectives in a general course.
- Awareness raising is important and students should realize that change can happen, especially regarding the importance of multiple ways of engagement (based on Universal Design and Universal Design for Learning).
- Students need to be able to consider accessibility as a basic parameter. People are not used to thinking about accessibility, especially if there is no regulation or instruction to do so. Thus, the existence of regulations with specific guidelines reminds people of what needs to be done.
- The importance of the example that instructors set when they deliver their courses to help students learn by example is stressed next to the importance of content itself.
- Future educators and current education students have been educated differently, in inflexible and less diverse learning environments. Hence, to be able to consider accessibility they need to be supported in thinking beyond their own experiences, to recognize the need for flexibility and availability of different options, including accessibility options that match the needs of different disabilities, options that address the needs of different learning profiles, as well as options for the diverse needs in navigating the learning environment, materials and content.

- Regarding acquiring some knowledge on specific disabilities, this should not be (and cannot be) very deep: the idea is to acknowledge specific impairments, but essentially to empower students to learn how to work on addressing the needs of any learner.
- The development of critical thinking is crucial and can be based on specific examples and scenarios.
- The content should include awareness material that will attract the interest of students. This can be achieved with relevant scenarios (including videos, with less text and presentations). The involvement of students in brief activities that raise awareness with impact is also considered important.
- Ultimately, practical digital skills are necessary to improve digital accessibility and accessibility in general.

Student evaluation

- The core of the evaluation should be the integration of learning objectives into tasks.
- Students' evaluation should address all outcomes, in all levels of Bloom's taxonomy (identify, create, design, criticize), and also at the level of school, class, and instruction. It could be made with the design of own scenarios and case studies, with the use of different means of representation. The activities can be collaborative, both for summative but mostly for formative evaluation. Multiple choice questions can also be used, for easier administration of the tests that might be used for evaluation purposes.

Ideas for the document on recommendations

- Recommendations should reach instructors and other personnel.
- Recommendations should include information of differentiated depth, according to the subject.

Agreed learning outcomes

- In the field of educational sciences, students should examine the school from the outside to the inside: the school, the class, and then the course. They should be able to identify physical barriers and also identify inflexibility in learning environments.
- In the field of educational sciences (and not only) students should suggest or look for solutions to remove barriers.
- In the field of educational sciences, students should also be able to design learning environments that integrate differentiation and Universal Design of Learning.

- In the field of education sciences (and not only) students should be able to evaluate and compare examples of accessibility including both policies and practices.
- In the field of educational sciences, students need to develop skills in assessing the learning materials that are available at school. But mostly, they should become activists, thus, they should learn to require accessibility in their own practice.

ICT/Sciences (JKU)

This focus group was carried out by Johannes Kepler University (Austria) on March 12, 2024 in an online format (Zoom meeting). It was scheduled for 60 minutes, which proved to be sufficient for addressing all questions effectively. At the outset, the ATHENA team clarified that the primary focus of ATHENA is on integrating accessibility and universal design into curricula, rather than solely on ensuring that universities are accessible for students. However, it showed, also during the first focus group, that there may be synergies between the two aspects. Regarding the definition of accessibility and universal design, the ATHENA team provided predefined definitions and sought the participants' opinions, streamlining this part of the discussion as it was not the primary focus of the group.

Participants agreed on the following topics:

Current status of accessibility and universal design into HE curricula

When discussing the incorporation of accessibility and universal design into teaching, participants noted the absence of specific requirements or recommendations from higher authorities. They collectively agreed that there are no known directives or guidelines outlining how to integrate accessibility into educational practices. This lack of formal guidance suggests a potential gap in addressing accessibility concerns within academic settings, leaving educators to navigate this aspect independently. One participant suggested that establishing such requirements could serve as a catalyst for progress in this area. Similarly, another emphasized the importance of raising awareness where such requirements exist but are not widely known. Furthermore, it was noted that while universities may profess commitments to accessibility, universal design, diversity, and equal opportunities, such statements often lack practical implications.

Incorporation of accessibility and universal design compared to gender and diversity

When comparing the incorporation of accessibility and universal design to efforts in promoting gender and diversity inclusivity, it is evident that gender-related initiatives

often have clearer requirements and institutional support. One participant pointed out the established requirements for gender-related topics, indicating a structured approach to their integration. Further elaboration revealed that these initiatives are legally and institutionally distinct, often mandated by agreements between equality committees and the administration. These agreements are codified into institutional statutes, providing a firm legal foundation. Another participant highlighted how gender and diversity initiatives at their institution are institutionalized, with dedicated committees producing guidelines that influence teaching practices directly.

In contrast, a question was raised regarding what steps could be taken to afford accessibility and universal design similar prominence. A participant suggested that while gender initiatives are well-established, there is room for improvement in intersectionality and diversity considerations. They proposed expanding the focus beyond gender to encompass a broader spectrum of diversity dimensions, including ethnicity. One proposed solution is integrating accessibility and universal design into existing institutional structures, similar to how gender initiatives are incorporated, ensuring they become integral components of teaching practices.

Where to incorporate accessibility and universal design

Incorporating accessibility and universal design should be a priority wherever curriculum revisions or developments take place, according to one participant's perspective. They suggested implementing global regulations across the organization to ensure consistency and adherence to the same standards for all stakeholders. Another participant emphasized the importance of mentioning accessibility and universal design as a cross-cutting theme across various disciplines. For instance, in software systems engineering, accessibility considerations are integral. Creating awareness around this topic is crucial, hence the necessity for frequent mentions to reinforce understanding among students. They proposed integrating accessibility discussions into various aspects of education, including software quality assessments and case studies, to illustrate its significance comprehensively. However, merely mentioning accessibility might not suffice; there's a need for dedicated instruction and in-depth exploration of the subject, aligning well with the principles of human-centered design. As a solution, they suggested introductory sessions for programs with similar content to ensure thorough coverage of this specialized material.

Accessibility and universal design as part of HE curricula and how it is related to accessible education

When considering accessible education and its relation to the integration of accessibility and universal design into higher education curricula, various suggestions emerged from the discussion. One participant in the previous focus

group proposed a proactive approach by encouraging students to submit assignments in accessible formats whenever possible to raise awareness of the importance of accessibility. The participants in this focus group all agreed that this is a good idea. They also agreed the need for document accessibility to become a standard practice, aiming to instil awareness of accessibility principles in students' minds. Another participant supported this idea, suggesting the implementation of a barrier-free check similar to plagiarism checks for student submissions. They also highlighted the potential for incorporating these topics into trainings on didactics for young doctoral candidates. Additionally, it was suggested that such practices could be incorporated for all written assignments, including scientific research papers. However, another participant cautioned that not all types of assignments may be suitable for this approach, citing examples such as early software prototypes, specifically where the focus of the lecture is not on the user interface design. Additionally, it was noted that accessibility education and achieving a completely barrier-free study environment are distinct matters.

Knowledge, skills, competences, and learning outcomes

Discussions revolved around the practical implementation of an accessibility check. Suggestions emerged regarding the allocation of responsibility, with consensus leaning towards the course instructor retaining oversight over the process's execution and the determination of consequences for non-compliance for course specific assignment. Additionally, considerations were raised regarding the evaluation of students' submissions for theses, emphasizing the need for automation to streamline the verification process if accessibility standards are to be uniformly upheld. One participant noted that while accessibility checks to measure document accessibility are integral components for evaluating students' knowledge, skills, and competencies in the realm of accessibility and universal design, they emphasized that these assessments represent just one facet of the broader spectrum. They underscored the importance of incorporating more specific areas of knowledge, suggesting that exams would remain an essential component of the overall evaluation process.

How to incorporate accessibility and universal design into as teaching content

When discussing the integration of accessibility and universal design into teaching content, participants explored various considerations. One participant noted the natural fit of web accessibility within web design courses. For the domain of software Accessibility reference was made to EN 301 549 v3.2.1 as a guiding framework. However, it was acknowledged that certain contexts, such as building prototypes solely with terminals or in compiler construction, may not lend themselves to accessibility considerations. Additionally, concerns were raised about the lack of a user perspective in prototypes built for research purposes within courses. While

sharing such artifacts with the research community, especially involving researchers with disabilities, was seen as beneficial, it was noted that the research community's awareness of accessibility issues may still be limited.

Important areas for accessibility and universal design

When discussing the domains where accessibility and universal design should be prioritized, participants identified several key areas. One participant highlighted the ongoing importance of these principles in software engineering. Another emphasized their significance in web development, scientific research, and all aspects related to human-computer interaction (HCI). Additionally, it was noted that the relevance of accessibility and universal design may vary depending on the specific course. However, participants agreed on their critical role in developing problem-solving skills among students. One suggested that students engage in solving either fictional or real-world problem scenarios, potentially through group work, with the learning objectives explicitly anchored in this process.

Ideas on what Athena's project recommendations should include

Recommendations for inclusion in the Athena document/deliverable were discussed. One suggestion emphasized the importance of case studies, particularly examining how companies successfully integrated accessibility processes. It was noted that standards can sometimes feel sterile, whereas case studies provide practical examples. Another participant supported the idea of case studies and proposed approaching the topic of accessibility in higher education similarly to sustainable development goals (SDGs). This approach would allow for the establishment of overarching goals and indicators, enabling institutions to derive and implement their own goals at the national level. Additionally, it was recommended to involve the target audience and to remain up to date to stay current with emerging trends.

Engineering and Architecture (MU)

The focus group carried out by Masaryk University (Czechia) took place on February 15, 2024, in online format (Zoom meeting). It aimed at discussing the integration of accessibility and universal design principles within higher education curricula in the field of Engineering and Architecture. During the 75 minutes of the session, the moderator guided the discussion ensuring all participants had the opportunity to contribute while aligning with the project's objectives.

Participants actively engaged with the discussion, with the moderator facilitating clarity and consensus among diverse perspectives. Regular summarizations of key points aided comprehension and assisted notetaking. Additionally, the moderator

streamlined conversations by combining questions as needed, allowing for thorough exploration within the allotted time.

In general lines, the group recommended identifying target groups for proposed changes and emphasized engaging stakeholders and student organizations to champion these initiatives.

Participants agreed on the following topics:

The evolution of accessibility and universal design

- Participants grasp the terminology in accordance with the guidelines provided by the United Nations Convention on the Rights of Persons with Disabilities.
- Participants recognize that the idea of accessibility is continually adapting to meet society's shifting demands, embodying a proactive, interactive, and inclusive approach involving all relevant parties.
- Advocates of universal design support adaptable adjustments that align with its specific interpretation.
- Participants comprehend that in engineering and architecture, sustainable design principles are integral, aiming to minimize environmental impact while enhancing functionality and inclusiveness for individuals with disabilities.
- It's acknowledged that modern engineering and architectural practices increasingly incorporate smart technology to improve accessibility, ensuring spaces and structures are more intuitive and accommodating for everyone, regardless of ability.

Integration of accessibility and universal design in academic programs

- Enhancing awareness and educating educators are crucial steps towards fully incorporating accessibility into all educational curriculums.
- It's essential to scrutinize the content focus of each course within academic curricula. Incorporating viewpoints that foster a respectful and inclusive interaction between students and individuals with disabilities as a cross-disciplinary skill in various undergraduate programs is beneficial.
- Within the realms of Engineering and Architecture academic programs, there's a pressing need for modules that address the principles of universal design and sustainable architecture, ensuring that future professionals are equipped with the knowledge to create accessible and environmentally responsible designs.
- The introduction of workshops and hands-on projects focusing on innovative accessibility solutions in engineering and architectural designs can significantly enhance practical understanding and application skills among students, preparing them to meet the diverse needs of society.

- Subjects to be integrated into existing Engineering and Architecture curricula could include:
 - Universal Design Principles in Engineering and Architecture: Emphasizing inclusivity and accessibility in all aspects of design and construction.
 - Sustainable Design and Accessibility: Exploring the intersection of environmental sustainability and accessible design to create spaces that are both eco-friendly and inclusive.
 - Assistive Technologies and Smart Systems in Buildings: Understanding the role of technology in enhancing accessibility for individuals with disabilities within built environments.
 - Legal Frameworks and Standards for Accessible Design: A comprehensive overview of the regulations, standards, and guidelines governing accessible design in engineering and architecture projects.
 - Case Studies on Innovative Accessible Infrastructure: Analysing successful projects that exemplify best practices in accessible design and construction, encouraging a practical understanding of the subject.

Transversality of accessibility and universal design

- Enhance disability awareness among students to cultivate an engineering and architecture professional community adept at addressing the accessibility needs of individuals with disabilities.
- Incorporating principles of accessibility and universal design across the entire curriculum might be more effective than modifying specific learning outcomes in course syllabi in Engineering and Architecture.
- Introduce interdisciplinary projects that require Engineering and Architecture students to collaborate with peers from Health Sciences, Information Technology, and Social Sciences to develop comprehensive solutions that address accessibility from multiple perspectives.
- Emphasize the importance of continuous professional development in the field of accessible design, encouraging students and faculty to stay informed about emerging technologies, materials, and methodologies that enhance accessibility in engineering and architecture.
- Advocate for the involvement of individuals with disabilities in the curriculum design process, ensuring that Engineering and Architecture programs benefit from first-hand insights and experiences, thereby fostering a more inclusive and empathetic approach to design.

Knowledge, skills, and competences

- Engineering and Architecture students must understand their projects' end users, ensuring their designs cater to various needs and contexts for broader inclusivity.
- Gaining fundamental knowledge about the communication requirements of individuals with disabilities and being aware of existing support services are essential skills for students, enhancing the accessibility of their designs.
- Students should cultivate a commitment to social realities, including the crucial aspect of accessibility, reflecting this commitment in their projects and designs.
- To incorporate essential themes across Engineering and Architecture studies while meeting specific degree requirements, two strategies should be employed: a) embedding a cross-disciplinary learning outcome that emphasizes social awareness and inclusivity, and b) integrating tailored content within courses that address each degree's specific needs.
- Engineering and Architecture curricula should include at least one module focusing on accessible communication techniques, especially in degrees that emphasize communication aspects of design.
- Understanding the experiences of people with disabilities, coupled with the ability to work effectively with this demographic, will enhance accessibility and universal design principles within the Engineering and Architecture fields.
- Developing empathy and sensitivity towards the diverse needs of users with disabilities is vital, encouraging a user-centered approach in design projects. Social skills should be emphasized as essential competencies for all future professionals in these fields.
- Awareness of personal biases and perspectives is crucial for students, helping them appreciate the diversity among individuals with disabilities and ensuring their designs are more inclusive.
- Incorporating learning outcomes that focus on a human rights-based approach, awareness, and accessible communication in Engineering and Architecture will significantly contribute to creating more inclusive environments.
- While it's challenging to specify an exact number of learning outcomes, integrating accessibility and universal design concepts throughout the curriculum is crucial. Engineers and architects play a significant role in shaping environments and must consider the diverse needs of all users, recognizing there is no standard human being.

Student evaluation

- Encouraging teamwork among students is crucial for evaluation purposes. Learning to critique peers' work fosters social awareness, crucial for making Engineering and Architecture education more inclusive and accessible.

- Implement reflection-oriented activities to promote deeper engagement and understanding among students.
- Internships offer valuable insights into students' strengths and weaknesses within Engineering and Architecture, including their approach to accessibility challenges.
- The criteria for student assessments should align with the learning outcomes, necessitating a range of evaluations from a broad comprehension of inclusivity and universal design principles to specific assessments within certain modules.
- For subjects like Architectural Design and Urban Planning, considering the effectiveness and inclusivity of the design solutions proposed by students can serve as a practical evaluation method.
- Incorporate project-based assessments that require students to address real-world accessibility issues, challenging them to apply theoretical knowledge to practical scenarios.
- Develop peer review systems where students can evaluate each other's designs based on accessibility standards and inclusivity, promoting a collaborative learning environment that values diverse perspectives.

Agreed learning outcomes

- Students should be skilled in designing and creating spaces that accommodate individuals from various backgrounds, emphasizing a user-centered approach that includes persons with disabilities.
- They need to differentiate between traditional engineering/architectural design principles and those guided by the human rights model of inclusivity.
- Awareness of resources and tools that enhance accessibility for people with disabilities in built environments is essential for students.
- Students must aim to make their designs and projects accessible to a wide range of users, ensuring inclusivity in all aspects of their work.
- Ensuring the accessibility of built environments, from residential buildings to public spaces, is a key competency for students.
- In Engineering and Architecture, students will learn to recognize and incorporate the physical and sensory needs of a diverse population into their design projects, ensuring spaces are welcoming and accessible for all.
- Students will acquire the skills to apply sustainable design principles that enhance accessibility, considering environmental factors that affect usability and accessibility for people with diverse needs.
- Students should be capable of integrating innovative technologies and materials in their designs to meet and exceed accessibility standards, preparing them for future challenges in design and architecture.

Recommendations

- Advocate for the crucial inclusion of universal design and accessibility principles in the Engineering and Architecture curricula at all educational levels.
- Encourage the implementation of immediate, actionable changes, while also advocating for broader, more comprehensive policy reforms in education and professional practice.
- Involve individuals with disabilities in the development and execution of curricula, as well as in the training of future engineers and architects.
- Facilitate engagement with people with disabilities or representatives from their organizations in lectures and workshops to offer first-hand insights.
- Incorporate experts in accessibility and inclusive design into the educational process through guest lectures and seminars.
- Foster collaborations beyond the confines of individual universities or disciplines, encouraging a broader exchange of ideas within the educational community focused on Engineering and Architecture.
- Encourage students and faculty in Engineering and Architecture to incorporate accessibility and inclusive design considerations into their research projects.
- Tailor recommendations to be discipline-specific, illustrating concrete ways in which accessibility and universal design principles can be integrated into Engineering and Architecture practices.
- Ensure that these recommendations are directly communicated to both curriculum developers and educators, as well as quality assurance agencies, involving students in the advocacy process for a more inclusive approach.
- Provide clear and comprehensive definitions of key terms like "accessibility" and "universal design" to foster a common understanding among all stakeholders in the fields of Engineering and Architecture.
- Promote the adoption of new technologies and materials in educational projects and research that advance accessibility and sustainability in Engineering and Architecture.
- Encourage the integration of case studies and practical projects in the curriculum that focus on solving real-world accessibility challenges, preparing students for future professional roles that demand innovative and inclusive solutions.
- Leverage emerging technologies such as 3D printing, virtual reality (VR)/augmented reality (AR), and immersive reality tools in the curriculum to teach students about creating accessible designs and environments, providing practical experience in innovative solutions that can address complex accessibility challenges.

- Promote the development and adoption of accessible learning materials and educational platforms within Engineering and Architecture programs, ensuring that digital content, online resources, and learning management systems are designed with universal access in mind. This approach not only supports students with disabilities but also serves as a practical model for students, illustrating the importance and implementation of accessibility principles in digital environments.

Health Sciences (EDF)

The focus group carried out by European Disability Forum (Belgium) took place on March 8, 2024, in online format (Zoom meeting). It aimed at discussing the integration of accessibility and universal design principles within higher education curricula in the field of Health Sciences. The session lasted 2 hours as planned. The moderator coordinated the session very well, giving space to all participants to express their thoughts, experiences, and suggestions.

During the session, participants mentioned some aspects related to the support for students with disabilities in universities, but they are not considered as outcomes in this report. Participants also highlighted that the systems for changing curricula are the biggest barrier in implementing and adding accessibility and universal design into the curricula for Health Sciences. It can take up to two years for a course description or a programme's learning outcome to change.

Participants who are educators emphasised that there are a lot of cases of burnout of lecturers in the medical field. It is important to realise that many educators who have the best intentions to implement their curricula do not always have the funding, time, or energy to make all the changes. Participants also suggested to identify the target group for the recommendations. This includes primarily stakeholders, student groups and unions/representatives to push for these policies.

Participants agreed on the following topics:

The definition of accessibility and universal design

- Participants have found through their work that accessibility and universal design have two different definitions. Accessibility refers to the threshold for ensuring that someone can engage in something while universal design means that something is equally accessible for all people.
- Accessibility is the precursor, but universal design is the ultimate goal.

Integration of accessibility and universal design in academic programmes

- First step is to raise awareness on the importance of the integration of accessibility and universal design in higher education curricula at all levels.
- All academic staff, professors, coordinators, and students need to be trained on the importance of integrating accessibility and universal design curricula.
- Subjects to be integrated into existing Health Sciences curricula could be:
 - o Disability rights in health care / Disability awareness
 - o CRPD includes Article 25 – Health – Disability
 - o Medical, social, and human right model of disability
 - o Accessibility Communication
 - o Best practices and implementation of accessible services

Transversality of accessibility and universal design

- Increase disability awareness among their students in order to develop a health professional workforce with the skills and competence to respond to the needs of people with disabilities.
- Participants agreed that engaging Health Science students in self-reflection is incredibly important. At one participant's university, there is a class on personal development for Health Science students. This participant emphasised that it is important for students to learn from each other through the self-reflective processes of this course.
- It is more practical for a professor to implement accessibility and universal design throughout their curriculum instead of changing learning outcomes in course syllabi.

Knowledge, skills, competences, and learning outcomes

- Knowledge of the experiences of persons with disabilities combined with the skills of how to work with persons with disabilities will improve accessibility and universal design in the Health Sciences field.
- Students should develop skills related to the Human Rights based approach with some knowledge on the Convention on the Rights of Persons with Disabilities (CRPD).
- Students should develop skills related to empathy and awareness towards the diversity of users with disabilities. Healthcare is human being/patient centered. Social skills should be required for all Health Professionals.
- The students should learn awareness of how their own perspective and prejudice impacts their work to understand diversity of disabilities.
- In Health Sciences it would be great to integrate learning outcomes focused on a human rights-based approach, awareness, and accessible communication.
- Participants found it hard to pinpoint an exact number of outcomes. Instead, they believed that accessibility and universal design should be mainstream

and integrated across curriculum. Health scientists are dealing with people's lives and there is no standard human being.

Student evaluation

- Collaboration with other students is key to assessment. Learning how to assess the work of others will help students develop the social awareness needed to make Health Sciences and Health Science curricula more accessible.
- Find ways for students to engage in the reflection process.
- Student internships serve as a great opportunity to learn what students are good and bad at in the field of Health Sciences. This includes accessibility.

Agreed learning outcomes

- The students should be able to treat patients from diverse backgrounds using a human centered approach. This includes persons with disabilities.
- They should understand the difference between the medical model and the human rights model.
- They should be aware of the available resources for people with disabilities when receiving medical care.
- They should make consultations accessible to the most diverse group of patients.
- They should provide accessible health treatment.

Recommendations

- Raise awareness on the importance of the integration of accessibility and universal design into higher education curricula at all levels.
- Recommendations should target the Ministry of Education, the University Senate, students, student unions, teachers, university staff.
- Recommendations should also include smaller, more tangible changes, but ultimately push for a larger and more ambitious policy change.
- Include people with disabilities in the curricula design and implementation, also in the training of healthcare professionals.
- Bring people with disabilities or their organisation representative during courses and seminars.
- Bring accessibility and universal design experts during courses and seminars.
- Work with the larger educational community and not just within your university or specific academic discipline.
- The students and professors should include disability and accessibility in their research.
- Give teachers time and space to grow and chose for their own

Consultation with experts (EURASHE)

Alongside with the focus group session, a consultation with experts was carried out by EURASHE. It was delivered as a written interview and involved 21 professionals coming from Lithuania, Czech Republic, Netherlands, Portugal, Romania, Croatia, Ireland, and one participant from Nigeria. Most of them have long experience inside the world of education, being pedagogues, professors, teachers, and managers of studies programmes, in addition one participant was a medical doctor. By the time of the consultation, most of them are heads of studies, deputy directors, coordinators, specialists for QA and head of international departments at Higher Education Institutions. One of them is a UI/UX and graphic designer. One of the respondents defines themselves as a person with disabilities.

Most of participants agree and have similar points of view even if coming from different backgrounds, experiences, and countries. It is important to consider that even if objectives, these answers have also a subjective character as the understanding and experiences of accessibility, universal design and their implementation in HE curricula might vary from one person to another. In few cases, some of the participants coming from Lithuania had opposite views regarding the existence and application of national guidelines.

Understanding of the concepts of accessibility and universal design being embedded in the HE curriculum

Most of the participants agree that the concepts of accessibility and universal design involve creating inclusive and educational environments for all students, overcoming students' barriers of background, disabilities, learning styles, physical and cognitive abilities, and gender. Some participants also refer to these needs for academic staff, teachers and researchers inside the HE. Half of the participants mention that universal design implies the design of the curricula, the adaptability of the content (i.e. with plain language), teaching methods, assessments, digital and physical environment and prepared academic staff and teachers. One of the participants also mentions that students need to be equipped with the skills and mindset to apply accessibility and, if possible, universal design, in their professional lives and activities. Two of the participants state that the curriculum has to be central for students in the same field.

In general, all participants state that the integration of accessibility and universal design in the curricula is crucial for equal and inclusive education, raising awareness and understanding of these issues among future professionals. Some of the participant highlight the importance of training staff and thinking in a holistic way further than the traditional sense of disabilities.

Awareness of national requirements or recommendations

Seven participants were not familiar with national recommendation and requirements. The rest knew recommendations or actions taken by their national governments and ministries, some naming the current laws, documents, and strategies. However, one of the participants from Lithuania thinks there is still a lack of adapted materials in HEI and, thus, there is a need for improvement of these legal guidelines.

Inclusion of accessibility and universal design in external quality assessment

Most of the respondents agree that there is an inclusion of accessibility and universal design in the assessments of quality in HEI, however the detail and level of assessment might vary depending on the country. Some cases, as Lithuania, Ireland and Croatia, state that these follow the national and European legislation. In Poland, only one standard of the national agency refers disabilities and accessibility.

Accessibility and universal design in EU HE curricula

Participants describe the implementation in EU HE curricula as an ongoing process that, as already mentioned, varies depending on the country and system but in overall, HEIs, try to reflect the European Universities Strategy through projects and the European University Alliances. Some participants also mention that situations may vary depending on the size of the institutions and there are still many improvements to be done.

Common knowledge and learning outcomes to be included across different areas of knowledge

Almost all participants think that there are skills, competence and knowledge on accessibility and universal design that can be included across different areas of knowledge, or at least a shared awareness about these topics. In a more detailed perspective these include user-centred design, legal and ethical considerations, understanding of accessibility principles, advocacy, inclusive learning and teaching, creating accessible contents, social skills, and general strategies for inclusivity.

Regarding learning outcomes, participants highlight technological proficiency when using, developing or teaching assistive technologies and user-centred design, understanding accessibility guidelines and standards, and social abilities. One of the participants also highlighted that particular attention need to be paid in disciplinary contexts, using as example the field of psychology and the special need to support persons with disabilities or the field of engineering and including accessibility in technological solutions.

Challenges and barriers when including accessibility and universal design in HE curricula

Barriers that are encountered when including these topics in HE are mostly related to lack of understanding from universities and educators, as well as lack of financial possibilities to improve activities, provide training to teachers and staff, and adapt materials and both physical and digital contexts. One of the participants named that these barriers are defined by the European Commission in the document “Implementation guidelines Erasmus+ and European Solidarity Corps Inclusion and Diversity Strategy” (2021). However, some participants indicate that there is a willingness from the staff to get involved and overcome barriers of ignorance, prejudice and lack of understanding. In addition, these barriers could be faced with promotion of good practices, financial investments, training staff and developing clear policies and guidelines.

Learning outcome(s) or specific modules for a BA programme

Participants gave the following examples:

- Ability to analyse and apply accessibility standards
- Integration of inclusive design principles in problem-solving
- Demonstrated proficiency in creating universally accessible interfaces
- Effective communication of design choices and their impact on diverse users
- Collaboration skills for working in diverse, interdisciplinary teams
- Critically evaluate inclusivity and accessibility in products and services
- Ability to work in a team, collaborate and communicate
- Develop and provide an inclusive learning environment
- Improve design and evaluation of accessible technologies

Afterwards, they also gave as example the following learning outcomes and modules applied in their own institutions:

- Inclusive interface design, user-centred accessibility testing
- Personal and social abilities, communication skills
- Research skills and critical thinking
- Assess educational development of pupils, explaining the learning patterns and reflecting on strategies determining quality education
- Adaptability to changing employment context
- Nursing of persons with disabilities
- Ability to explain and describe diagnosis and basic therapy
- Ability to develop lifelong learning skills
- Ability to communicate and cooperate with other professionals, regardless of their abilities and experience

Recommendations for including accessibility and universal design in BA and MA programmes

Most participants recommend the training of academic staff, including administrative personnel, teachers, associates and researchers. Following participants' recommendations, these not only need to know how to address, communicate, use and teach accessibility universal design, but must teach by example to their colleagues and students. In addition, some participants repeat that there is a need on guidelines and policies to better include these topics in HE curricula, better integration of accessible technologies, implementation of accreditation processes of the derived skills and competences, and a periodical evaluation of accessibility in institutions, consulting students but also users. One of the participants proposes to create elective courses or workshops defined by ECTS specific to the field or study programme.

Suggestions to actively involve students/users in the process of designing accessible HE curricula

Participants shared that students and users should be actively involved in the process of designing HE curricula, some of them give as example surveys, but others also propose focus groups, advisory panels to allow them to share their experiences, evaluate the issues and provide ideas to the improvement or adaptation of the curricula. Others also propose interaction with experts in accessibility, workshops, brainstorming, trainings and involving them in such activities since their first year in the institution. In addition, two participants provided two examples, the international project IDOL and UDL Student Digital Badge.

However, one of the participants thinks that students should be thought in advance as they lack knowledge and empathy in such topics.

Useful sources and materials presenting policies or practices for including accessibility and universal design across BA and MA programmes, additional information

- [Disability and individual needs - MRU \(mruni.eu\)](https://mruni.eu)
- [Utenos kolegijos mažiau galimybių turinčių asmenų tvarka.pdf \(utenos-kolegija.lt\)](https://utenos-kolegijos-maziau-galimybiu-turinciu-asmenu-tvarka.pdf)
- [National reforms in higher education \(europa.eu\)](https://europa.eu)
- [VMU-disability-policy-University-of-inclusive-opportunities-2.pdf \(vdu.lt\)](https://vdu.lt)
- Proformance.eu tool and database
- UN-Convention on the Rights of Persons with Disabilities
- Law On The Framework For The Protection Of The Rights Of Persons With Disabilities, 2024

- European University Strategy
- Elissa Weeden. A model of an accessibility curriculum in higher education.
<https://www.frontiersin.org/articles/10.3389/fcomp.2023.1139350/full>
- ATU Programme Design Policy [AQAE004 Programme Design Policy \(1\).docx](#)
- Altitude UD Charter in Tertiary Education
- Education - LNF - Lietuvos Negalios Organizacijų Forumas
- Nacionalinė švietimo agentūra - National Agency for Education (smm.lt)
- Inclusive education - European Education Area (europa.eu)

Key findings

After analysing the focus group discussions on shared skills across areas of knowledge, key findings emerged regarding the integration of accessibility and universal design into HE curricula. These findings comprise consensus points regarding the importance, strategies, and recommended actions for integrating accessibility principles across diverse disciplines and educational levels.

Integration of accessibility in academic programs
To integrate accessibility and universal design into academic programs across various disciplines and educational levels (both BA and MA programs).
To embed accessibility in national legislation and university statutes
To include accessibility in quality evaluation of academic programmes
To treat accessibility as a transversal topic, initially introducing it as a dedicated subject facilitated by accessibility experts, and eventually ensuring full integration throughout the curriculum.
To train educators in accessibility for an effective inclusion in teaching methods and course content.
To engage directly with individuals with disabilities and Organisations of Persons with Disabilities (OPDs) to get valuable insights for curriculum adjustments addressing accessibility concerns effectively.
To share both successful and unsuccessful implementation experiences is crucial for collective learning and continuous improvement.
Practical recommendations supported by real examples and multimedia aids are essential for effective integration.

Knowledge, skills, and competences

There is a need for collective comprehensive knowledge of accessibility principles across all fields.

A course that includes content such as the UN Convention on the Rights of Persons with Disabilities or the Web Accessibility Act in all curricula could be a possibility. The method of user centred design could also be content.

Need for basic knowledge on how to create accessible documents (e.g. fonts size, type, contrast, basic accessibility of images).

Disability and accessibility awareness are central elements and can be achieved through the use of disability simulations.

To use of simulations of disability in developing disability and accessibility awareness and experience.

Student evaluation

Student evaluation should incorporate practical scenarios mirroring real-world situations related to accessibility, fostering critical thinking and problem-solving skills.

Students should demonstrate effective communication skills tailored to the accessibility requirements of diverse users.
Students should hand in accessible documents for evaluation.

Agreed potential learning outcomes

To understand foundational concepts and historical evolution of societal responses to diversity, especially in the context of accessibility, and to apply this understanding to professional practice.

LOs should focus on promoting an inclusive mindset and practical competencies to address diverse accessibility challenges.

To consider at least one LO fully dedicated to accessibility and universal design.

To integrate accessibility and universal design concepts into existing LO across disciplines, similar to how gender perspective was integrated.

To include a LO on understanding and identifying barriers for different users across different areas of knowledge.

To identify diverse accessibility needs of users within specific professional contexts.

After analysing the specific focus group discussions, key findings emerged regarding the integration of accessibility and universal design into higher education curricula across different fields of knowledge. The common points are summarized in the tables below.

Integration of accessibility in academic programs	
Arts and Humanities	<ul style="list-style-type: none"> • Design BA: there is an interest in creating a course on social design to explore how to create products that serve end-users needs within social contexts. • Fine Arts BA: some courses theoretically address diversity, although specific attention to accessibility may be lacking. • Translation BA: There is a course titled “Introduction to Technologies,” which delves into the application of digital accessibility in text documents.
Social Sciences and Law	<ul style="list-style-type: none"> • Introductory courses in Inclusive Education programs pertain to the social model of disability, also including notions of universal design and accessibility, often connecting that to differentiation of instruction. Emphases included in these courses refer to removing barriers, the importance of accessibility and disability services, and notions of Universal Design. • There is a need for collaboration with other programs and with other courses within the same program, highlighting the importance of a cross-disciplinary approach to teaching about accessibility. • Impact is larger if the relevant concepts (e.g. technology issues in general, including those related to accessibility) are often included in all courses within a program.
ICT/Sciences	There are no directives or guidelines mentioned during the focus group outlining how to integrate accessibility into educational practices.
Engineering and architecture	<p>Subjects to be integrated into existing Engineering and Architecture curricula could include:</p> <ul style="list-style-type: none"> • Universal Design Principles in Engineering and Architecture: Emphasizing inclusivity and accessibility in all aspects of design and construction. • Sustainable Design and Accessibility: Exploring the intersection of environmental sustainability and

	<p>accessible design to create spaces that are both eco-friendly and inclusive.</p> <ul style="list-style-type: none"> • Assistive Technologies and Smart Systems in Buildings: Understanding the role of technology in enhancing accessibility for individuals with disabilities within built environments. • Legal Frameworks and Standards for Accessible Design: A comprehensive overview of the regulations, standards, and guidelines governing accessible design in engineering and architecture projects. • Case Studies on Innovative Accessible Infrastructure: Analysing successful projects that exemplify best practices in accessible design and construction, encouraging a practical understanding of the subject.
Health Sciences	<p>Subjects to be integrated into existing Health Sciences curricula:</p> <ul style="list-style-type: none"> • Disability rights in health care / Disability awareness • CRPD Convention, includes Article 25 – Health – Disability • Medical, social, and Human Right Model of disability • Accessible information and communication • Best practices and implementation of accessibility services

Knowledge, skills, and competences

Arts and Humanities	<ul style="list-style-type: none"> • To address shared elements in Arts and Humanities studies while accommodating specific BA requirements, two approaches could be considered: a) integrating a cross-disciplinary learning outcome focused on social awareness and diversity, and b) incorporating specific content within subjects adapted to each BA's needs. • It is necessary to include at least one subject on accessible communication in communication-related degrees.
Social Sciences and Law	<ul style="list-style-type: none"> • There should be overall at least one LO in a program of study related to accessibility, and up to 4 objectives in a general course. • Students need to be able to consider accessibility as a basic parameter.

	<ul style="list-style-type: none"> • Learn by example is stressed next to the importance of content itself. • Development of critical thinking in identifying barriers and discrimination • Practical digital skills are necessary to improve digital accessibility and accessibility in general.
ICT/Sciences	<ul style="list-style-type: none"> • Accessibility and universal design are important principles in software engineering. • To develop problem-solving skills among students, potentially through group work, with the learning objectives explicitly anchored in this process.
Engineering and architecture	<ul style="list-style-type: none"> • Students must understand their projects' end users, ensuring their designs cater to various needs and contexts for broader inclusivity. • To incorporate essential themes across Engineering and Architecture studies while meeting specific degree requirements, two strategies should be employed: a) embedding a cross-disciplinary learning outcome that emphasizes social awareness and inclusivity, and b) integrating tailored content within courses that address each degree's specific needs. • Engineering and Architecture curricula should include at least one module focusing on accessible communication techniques, especially in degrees that emphasize communication aspects of design. • Developing empathy and sensitivity towards the diverse needs of users with disabilities is vital, encouraging a user-centered approach in design projects. Social skills should be emphasized as essential competencies for all future professionals in these fields.
Health Sciences	<ul style="list-style-type: none"> • Students should develop skills related to the Human Rights based approach with some knowledge on the Convention on the Rights of Persons with Disabilities (CRPD). • Students should develop skills related to empathy and awareness towards the diversity of users with disabilities.

	<ul style="list-style-type: none"> • Students should learn awareness of how their own perspective and prejudice impacts their work to understand diversity of disabilities. • Accessibility and universal design should be mainstream and integrated across curriculum.
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Student evaluation	
Arts and Humanities	<ul style="list-style-type: none"> • Assessment criteria are dependent on the learning outcomes being evaluated. This means considering various levels of assessment, ranging from a broad understanding of accessibility and universal design to the specific evaluation of learning outcomes within some courses. • In the context of Translation Studies, evaluating the quality of the service provided is a feasible approach.
Social Sciences and Law	<ul style="list-style-type: none"> • The core of the evaluation should be the integration of learning objectives into tasks. • The evaluation should address all outcomes, in all levels of Bloom's taxonomy (identify, create, design, criticize), and at the level of school, class, and instruction. • Implementing an accessibility evaluation.
ICT/Sciences	<ul style="list-style-type: none"> • Implementing an accessibility check. • Need for automation to streamline the verification process if accessibility standards are to be uniformly upheld.
Engineering and architecture	<ul style="list-style-type: none"> • Encouraging teamwork among students. • Implement reflection-oriented activities to promote deeper engagement and understanding among students. • Internships offer valuable insights into students' strengths and weaknesses within Engineering and Architecture, including their approach to accessibility challenges. • The criteria for student assessments should align with the LOs, necessitating a range of evaluations from a broad comprehension of inclusivity and universal design principles to specific assessments within certain modules.

	<ul style="list-style-type: none"> • For subjects like Architectural Design and Urban Planning, considering the effectiveness and inclusivity of the design solutions proposed by students can serve as a practical evaluation method.
Health Sciences	<ul style="list-style-type: none"> • Find ways for students to engage in the reflection process. • Student internships serve as a great opportunity to learn what students are good and bad at in the field of Health Sciences.

About the recommendations document	
Arts and Humanities	<ul style="list-style-type: none"> • Recommendations should be specific and practical, supported by real examples and multimedia aids to facilitate comprehension. • Sharing both successful and unsuccessful implementation experiences. • Direct engagement with individuals with disabilities through dedicated sessions can provide valuable insights into their needs and experiences.
Social Sciences and Law	<ul style="list-style-type: none"> • Recommendations should reach instructors and other personnel. • Recommendations should include information of differentiated depth, according to the subject.
ICT/Sciences	<ul style="list-style-type: none"> • Recommendations should include case studies, particularly examining how companies successfully integrated accessibility processes. • Approaching the topic similarly to sustainable development goals (SDGs). • Recommendations need to involve target audiences and remain up to date to stay current with emerging trends.
Engineering and architecture	<ul style="list-style-type: none"> • Recommendations should prioritize the implementation of immediate, actionable changes while also advocating for broader, more comprehensive policy reforms in education and professional practice. • Tailor recommendations to be discipline-specific, illustrating concrete ways in which accessibility and universal design principles can be integrated into Engineering and Architecture practices.

	<ul style="list-style-type: none"> • Provide clear and comprehensive definitions of key terms like "accessibility" and "universal design" to foster a common understanding among all stakeholders. • Recommendations should promote the development and adoption of accessible learning materials and educational platforms within Engineering and Architecture programs, ensuring that digital content, online resources, and learning management systems are designed with universal design in mind.
Health Sciences	<ul style="list-style-type: none"> • Recommendations should target the Ministry of Education, the University Senate, students, student unions, teachers, university staff. • Recommendations should also include smaller, more tangible changes, but ultimately push for a larger and more ambitious policy change. • Include people with disabilities in the curricula design and implementation, also in the training of healthcare professionals. • Work with the larger educational community and not just within your university or specific academic discipline.

Agreed potential learning outcomes	
Arts and Humanities	<ul style="list-style-type: none"> • Translation Studies: Students will be able to recognize the communicative and cultural needs of a diverse society and effectively respond to these needs within various contexts. • Translation Studies: Students will be able to apply basic knowledge about digital accessibility in documents to address the needs of a diverse society. • Philology Studies: Students will be able to identify the diverse needs of students in their classroom and look for the necessary resources to create an inclusive learning environment.
Social Sciences and Law	<ul style="list-style-type: none"> • Students will be able to identify physical barriers and also identify inflexibility in learning environments. • Students should be able to design learning environments that integrate differentiation and Universal Design of Learning. • Educational sciences: Students will be able to assess the learning materials that are available at school and know how to apply accessibility requirements in their own practice.

ICT/Sciences	<ul style="list-style-type: none"> • Students will be able to understand the needs and requirements of different groups of people with disabilities • Students will be able to design user interfaces accessible to people with disabilities according to international standard • Students will be able to produce accessible documents/reports
Engineering and architecture	<ul style="list-style-type: none"> • Students will design and create spaces that prioritize inclusivity for individuals from diverse backgrounds, including those with disabilities, through a user-centered approach. • Students will differentiate between traditional design principles and those informed by the human rights model of inclusivity, integrating concepts that prioritize accessibility for all users. • Students will identify and use resources and tools to enhance accessibility for people with disabilities in built environments. • Students will integrate accessibility considerations into their designs and projects, ensuring inclusivity for a wide range of users across residential and public spaces. • Students will apply sustainable design principles to enhance accessibility, considering environmental factors that impact usability for people with diverse needs. • Students will integrate innovative technologies and materials into their designs to meet and exceed accessibility standards, preparing for future challenges in design and architecture.
Health Sciences	<ul style="list-style-type: none"> • Students will be able to treat patients from diverse backgrounds using a people centered approach. This includes persons with disabilities. • Students will be able to understand the difference between the medical model and the human rights model. • Students will be aware of the available resources for people with disabilities when receiving medical care. • Students will be able to make consultations accessible to the most diverse group of patients. • Students will be able to provide accessible health treatment.

SECTION 2. Co-Design Sessions Reports

Section 2 of this document presents the results from a series of co-design sessions conducted in five different countries (Austria, Belgium, Cyprus, Czechia, and Spain). These sessions aimed to collaboratively develop sample courses for BA and MA programmes in various fields of knowledge, integrating accessibility and universal design principles. This phase is linked to Task 2.2 of WP2 and demonstrates how accessibility and universal design can be incorporated into specific modules across diverse disciplines. The resulting sample courses serve as models that could be implemented in HE institutions across Europe and can be consulted in Annex 3.2. and in Deliverable D2.2. “Recommendations and Sample Courses.”

Methodology

A total of five sample courses were created, one per partner institution, as outlined in Table 4, which provides an overview of the selected BA/MA programmes, and the corresponding courses designed during the co-design sessions.

Table 4. Select courses to be developed during the co-design sessions

Partner	BA/MA	Course
UAB	BA in Translation and Interpreting	Audiovisual translation and accessibility
EUC	MA in Education Sciences: Special and Inclusive Education (also MA Education Sciences: Learning and Communication Technology and STEAM Education)	Technology and Accessibility in Inclusive Education (Technology & Disability)
EDF	Lecturers and educational leaders across various BA/MA programmes	Training of Trainers (ToEduL) - Disability Inclusion and Accessibility
JKU	BA Computer Science and BA Artificial Intelligence	Digital Accessibility
MU	BA in Information Services Design	Digital Accessibility

First, each partner institution selected a course within their respective areas of expertise. This course could either be an existing one that required revision to integrate accessibility, or a new course designed specifically for the program. Alternatively, if neither option was feasible, the design of a hypothetical course was also an option.

To gather input for the course design, each partner organised a minimum of two co-design sessions. The sessions began with the identification and invitation of participants, which included educational leaders or program creators familiar with course design, alongside key stakeholders. These stakeholders included user representatives, former students of the BA/MA program, potential employers (such as industry professionals or companies likely to hire graduates), and professionals with relevant expertise in the field. The format of the sessions, whether in-person or online, as well as the date and duration, were decided based on practical considerations by each institution. Accessibility measures were prioritised where necessary to ensure inclusive participation.

Finally, a template was developed by UAB and shared with the partners to be completed after the sessions (see Annex 3.1).

UAB

Two co-design sessions were held online via Teams to gather feedback on the course "Audiovisual Translation and Accessibility" as part of the BA in Translation and Interpreting at the Universitat Autònoma de Barcelona. The first session took place on 22/05/2024 and lasted two hours, involving three educational leaders (the Vice-dean of Studies and former MA coordinator, the current MA coordinator, and the Vice-dean of Quality and Academic Affairs). The second session, held on 07/06/2024 for one hour, included the same educational leaders, as well as a former BA student, a user with low vision holding a PhD in the field, a professional translator and instructor, and two employers. These sessions were aimed at enhancing the course's accessibility and relevance to both students and the industry.

The first session focused on technical aspects and involved three educational leaders and program creators (two vice-deans and one MA coordinator). The aim was to develop a first draft of a course syllabus that could be used as part of the ATHENA sample courses but that also fulfilled the requirements of the new BA in Translation and Interpreting (provisional title) that is in the process of being designed. The outcome of this session was a first draft of the course syllabus.

The second session aimed to discuss and validate the proposal with a user representative, a former student, two employers, and a professional. The participants validated most of the proposal but asked to: a) clarify the language pairs involved in the course; b) include users during the course, either in invited seminars or as evaluators of student-created products, and c) reorganise the contents and redistribute the sessions. These suggestions had an impact on the following sections: Content, methodology, and evaluation. No comments were made on the objectives, learning outcomes and reference section.

Although the course is initially intended for the Translation and Interpreting BA, some participants suggested offering it as an elective in other degrees such as communication, journalism, and philology.

EUC

Two co-design sessions were held online via Teams for the course "Technology and Accessibility in Inclusive Education (Technology & Disability)" as part of the MA in Education Sciences: Special and Inclusive Education at European University Cyprus (EUC). The same course is also recently available as an elective for the students of the MA Education Sciences: Learning and Communication Technologies and STEAM Education. The first session took place on 29/04/2024 (2 hours), involving three educational leaders (the Vice-Rector of Academic Affairs, the former MA coordinator and course creator, and the current MA coordinator) as well as a former MA student. The second session, held on 21/05/2024 (1 hour), expanded the discussion to include two external experts (academics specializing in disability and inclusive education), a former and current MA student, an employer from an AT and accessibility company, a special education teacher, and an early childhood education professional. Both sessions were followed by online discussions and questionnaires to further refine course content and ensure it met the needs of both educators and industry professionals.

The first session focused on technical and course structure aspects. Three educational leaders within the institution (Vice-Rector of Academic Affairs, former MA coordinator and course creator, current MA coordinator) and one former student of the MA, who was previously involved in the accreditation processes, participated in the meeting. The aim was to review the existing course syllabus, that could be used as part of the ATHENA sample courses. It is noted that the course also fulfils the requirements of the current MA in Education Sciences: Special and Inclusive Education that are both currently under internal programmatic review process at EUC. The outcome of this session was a first draft of a revised course syllabus based on the comments of this team, as well as on comments and feedback from other sources such as: students' course evaluation survey results from previous semesters, alumni focus groups and faculty and students survey questionnaire on the quality of the programme and courses overall.

The second session aimed to discuss and validate the revised course syllabus with former and current student representatives, a possible employer, and AT and accessibility industry representative, two education professionals (special education and mainstream ECEC) and two disability and inclusive education experts. The participants validated most of the proposed course syllabus revisions but asked to: a) clearly define objectives relevant to identification of barriers, b) include users' and

educators' experiences either in invited seminars or as evaluators of relevant assignments, and c) include the aspect of co-design in addition to universal design for learning that is already included in the course. These suggestions had an impact on the following sections: Content, methodology, and evaluation. No comments were made on the reference section.

Although the course was initially designed and offered for the MA Education Sciences: Special and Inclusive Education, it has been recently introduced as an elective for the MA Education Sciences: Technologies for Learning and Communication and STEAM Education. Participants suggested that the course should continue being offered in this degree, as well as in others such as the newly proposed programmes of MA in Adult Education and Human Resources Management and MA in Digital and Soft Skills, the existing MA Education Sciences: Creativity and Play in Early Childhood Education and a newly developed (under evaluation) Joint Master in Innovation and Technology for Education.

EDF

Three co-design sessions were conducted as part of the "Training of Trainers (ToEduL) - Disability Inclusion and Accessibility" course developed by the European Disability Forum (EDF). The first two sessions were held online, with the first on 4th July (1 hour), involving an accessibility expert with extensive experience in training and a course developer specializing in inclusive, user-centred practices. The second session took place on 1st August (2 hours) and included a user representative (a person with disabilities), two accessibility experts—one of whom represented an employer working on digital accessibility—and an EDF policy expert. A final in-person review session was conducted on 10th September (1 hour) at the EDF office, with a user representative/accessibility expert with disabilities and a digital accessibility trainer. The sessions aimed to enhance the content and delivery of the course for lecturers and educational leaders across various BA and MA programs.

The results of the focus groups conducted by ATHENA's partners strongly shown that all academic staff, professors, coordinators and students need to be trained on the basic principles of Disability and Accessibility. All the educational leaders would benefit from initiatives aimed at raising awareness on disability inclusion.

EDF organised 2 co-design sessions involving accessibility experts, training developer, user with disabilities and policy expert with the aim to develop a training course for lectures and educational leaders in any BA or MA programme.

The outcome of the first session was a first draft of the training structure through assessing the trainings needs and defining learning objectives.

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The second step was to identify key topics and based on the topics the participant defined the number of training sessions.

The second session aimed to discuss and validate key topics and related concepts. The participants involved discussed the concepts such as the UNCRPD, Social, Medical and Human Right model of disability, assistive technology etc. The participants introduced new key topics such as accessible environment and communication.

The second step was to identify the content of the 5 sessions: Session 1. Introduction to disability inclusion, Session 2. Introduction to accessibility principles, Session 3. Digital Accessibility, Session 4. Accessible environment, Session 5. Accessible communication.

JKU

Two in-person co-design sessions were conducted for the course "Digital Accessibility" as part of the BA in Computer Science and/or BA in Artificial Intelligence at Johannes Kepler University Linz. The first session, held on 08/08/2024 (1.5 hours), involved an educational leader (a deputy head and computer scientist), an accessibility expert, and a professional/user representative who is a technical manager and deputy managing director in the area of information technology and inclusion. The second session, on 04/09/2024 (1.5 hours), included an employer and accessibility expert (managing director), a professional in information technology, and a former student who is now an accessibility expert. A final review was carried out with an educational leader (head of the study department) and a user representative who is an accessibility expert and blind. These sessions helped shape the course to ensure practical relevance and inclusivity.

The first co-design session focused on designing the Digital Accessibility course from scratch. In the first part of the co-design session the structure of the course was developed and then there was a long discussion about the methods to be used in the course. The course should be a combined course, i.e. there should be a theoretical part followed by a practical part to deepen and apply the acquired knowledge in group work. The theoretical part should be presented in (professional) videos of about 20 minutes, which the students should watch before the course in order to have more time for practical work during the lecture in class. Using professional videos to present the theoretical part has the advantage for the ATHENA project that wherever this model course is used, the same content is presented, and the lecturers can concentrate on the practical implementation. In addition to the practical

work in the classroom, the students have to do a larger practical group work in class for about 270 minutes.

The second co-design session started with the presentation of the course design from the first co-design session. The focus of the participants in this session was mainly on the content, which was further elaborated and developed. It was important for them that there is not only one lesson on assistive technologies, but two, in order to broaden the understanding of different target groups, their needs, the assistive technologies they use and their respective limitations.

In the first co-design session it was suggested that students could do the INCITE Accessibility Certificate if they wish (a national certificate for web accessibility experts in Austria), which could be done instead of an exam. However, both ideas were rejected in the second co-design session for the following reasons: The INCITE Accessibility Certificate is Austrian and there is nothing comparable at European level. Furthermore, the students do so much practical work that additional exams would be too much. So, the evaluation is 50 percent continuous assessment and 50 percent group work.

After the two co-design sessions, the syllabus of the Digital Accessibility course was sent to another (blind) user representative and to the study department of JKU to check the developed syllabus one last time.

The user representative suggested including LibreOffice as part of Document Accessibility and enhanced the readability and clarity of the report.

The study department gave organisational advice, which the Austrian research team would like to include here and incorporate into the project. This is not intended to be part of the curriculum per se, but should be considered during the implementation phase on a university-by-university basis:

- Coordination with the Chair of the Study Commission, the Vice-Rector for Teaching and Students, possibly also with the Curricular Commission, the Department, or the Rectorate.

Key parameters:

- Anchoring the course in one of the two curricula (BA Computer Science or BA Artificial Intelligence). The other curriculum would have to purchase the course.
- Anchoring in specific subjects and integrating into the study programme so that the total number of ECTS fits in the end. This will be reviewed by the Study Commission.

- Number of semester hours per week.
- Specific prerequisites: Attended courses before.
- Number of courses that are offered as this affects the costs.
- Division number of the course.
- Cycle (yearly, semesterly).
- Cost: Choosing the lecturer (internal, external) and the type of teaching assignment and remuneration.
- Allocation procedure for the students (usually direct allocation).
- Planned start date of the implemented course in the study programme, depending on the submission by the Study Commission (possible once a year).

MU

Two online co-design sessions were held for the course "Digital Accessibility" as part of the BA in Information Services Design (online) at Masaryk University, Czechia. The first session, on 31/07/2024 (75 minutes), included three educational leaders (the guarantor of the study programme, the department head, and a lecturer), a researcher, an external lecturer who is a UX/UI designer, and a former BA student. The second session, on 21/08/2024 (75 minutes), brought together four educational leaders (the guarantor, a researcher, and two teachers), two external UX/UI design experts, a current BA student, and two external experts with disabilities. The final review, submitted by 13/09/2024, involved written feedback from the guarantor, two teachers, two external experts with disabilities, and an external interaction designer. These sessions ensured the course was refined to address both academic and practical aspects of digital accessibility.

The first co-design session concentrated on the foundational structure of the "Digital Accessibility" course. The participants included three educational leaders (the guarantor of the study programme, the department head, and a lecturer), along with a researcher, an external lecturer specializing in UX/UI design, and a former student of the BA programme. This session aimed to review the existing course syllabus from its pilot edition that took place last year, to revise the core topics of the course and ensure alignment with both the institution's academic goals, current trends in accessibility, and needs of real users.

Key outcomes included the identification of essential technical modules, such as document accessibility, web content accessibility, and assistive technologies. The former student suggested incorporating more practical elements, particularly hands-on workshops, exercises and case studies that reflect real-world challenges. The UX/UI designer emphasized the need to integrate user-centered design principles throughout the course. As a result, the course structure was adjusted to include

more iterative, user-feedback-driven projects. No major changes were proposed regarding the course's objectives or learning outcomes.

The outcome of this session was a first draft of a revised course syllabus based on the comments of this team, as well as on comments and students' course evaluation survey results from the previous semester.

The second session shifted towards refining the course content and validating it with a broader group of stakeholders. Participants included four educational leaders (the guarantor, a researcher, and two lecturers), two UX/UI experts, one current BA student, and two external experts with disabilities. This session focused on ensuring that the course material would be accessible and relevant to a diverse range of users, including those with disabilities.

Key suggestions from this session included: a) including guest lectures from individuals with lived experience of digital inaccessibility to offer students deeper insights; and b) reviewing the course's evaluation criteria to better reflect practical outcomes and student engagement with real accessibility challenges. These recommendations influenced the course's content, methodology, and evaluation sections, leading to a more holistic approach that emphasizes both technical competence and empathy towards users with disabilities.

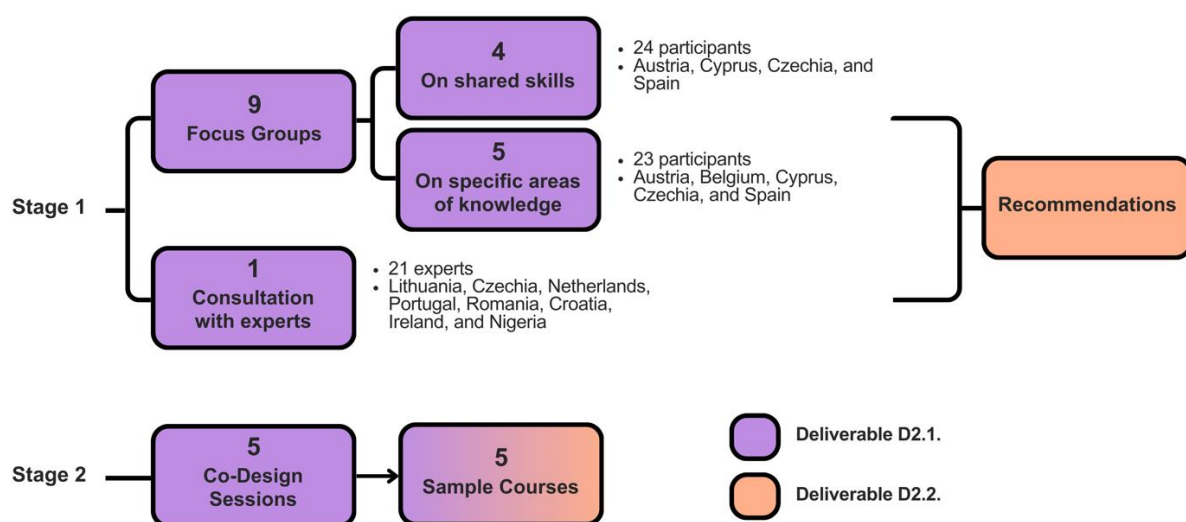
Following the two co-design sessions, a Final Review was conducted with the participation of the guarantor of the study programme, two teachers, two external experts with disabilities, and an external expert in interaction design. This stage aimed to finalize the course and ensure it met all accessibility standards. The external experts with disabilities provided feedback on specific tools and technologies to be included, while the interaction designer suggested adjustments to the course's project-based activities to enhance student creativity and collaboration.

Conclusion

This document provides an overview of the activities conducted under WP2 of the European-funded ATHENA project, comprising two key tasks: Task 2.1, which aimed to create recommendations for implementing accessibility and universal design principles across higher education curricula in various disciplines, and Task 2.2, focused on designing sample courses that integrate these concepts. All partner institutions collaborated on this work package, representing five countries—Austria, Belgium, Cyprus, Czechia, and Spain.

To fulfil both tasks, a series of focus groups and co-design sessions were carried out. In total, nine focus groups were conducted: four on shared skills with 24 participants, and five on specific areas of knowledge with 23 participants from Austria, Belgium, Cyprus, Czechia, and Spain. Additionally, a written consultation gathered insights from 21 experts from Lithuania, Czech Republic, Netherlands, Portugal, Romania, Croatia, and Ireland, along with one participant from Nigeria. The result of these focus groups are the recommendations that can be consulted in Deliverable D2.2. “Recommendations and Sample Courses”. Additionally, five co-design sessions were also held, leading to the development of sample modules across diverse disciplines. Figure 2 summarises the activities developed under WP2.

Figure 2. Overview of activities in WP2 of the ATHENA project



Annexes

Annex 1. Desk Review

The present desk review reports on the basis to call for the inclusion of universal design and accessibility in university curricula across areas of knowledge. For an additional legislative account regarding the accessibility requirements in each of the university partners' countries, please refer to the ATHENA project's WP1 transnational report, section "Accessibility in education: National context and legislative aspects".

Global context

The UN Convention on the Rights of Persons with Disabilities

The UN Convention on the Rights of Persons with Disabilities (CRPD) firstly recognises

accessibility as a precondition for persons with disabilities to live independently and participate fully in society, including physical, social, economic, and cultural environment, in health and education, information and communication.

Article 9 delves deeper into the "measures to enable persons with disabilities to live independently and participate fully in all aspects of life", citing five areas in which accessibility measures are to be implemented. In Table 5, these areas are listed, together with their relevant ISCED Fields of Education and Training.

Table 5. Areas of accessibility and related fields of education and training

Area of accessibility	Broad field	Narrow and detailed fields
Physical environment	Engineering, manufacturing, and construction	Architecture and construction: Architecture and town planning, Building and civil engineering
Transportation	Engineering, manufacturing, and construction; Services	Architecture and construction; Transport services; Travel, tourism and leisure

Information and communication	Information and Communication Technologies; Arts and Humanities; Social sciences, journalism, and information	Audio-visual techniques and media production; Journalism and reporting, Library, information, and archival studies
Information and communication technologies and systems	Information and Communication Technologies	Computer use, Database and network design and administration, Software and applications development and analysis
Other facilities and services	Health and welfare; Services	

Aside from implementing accessibility measures in these areas, State Parties¹ also committed to provide “training for stakeholders on accessibility issues facing persons with disabilities”, which is the general purpose of the ATHENA project.

Additionally, other than accessibility measures, the UN CRPD also recognises particular rights which are to be reflected in other fields of education and training: Article 12: the right of equal recognition before the law (Business, administration and law), Article 24: the right to education (Education), Article 25: the right to the enjoyment of the highest attainable standard of health (Health and welfare), and Article 30: the right to take part on an equal basis with others in cultural life (Arts and Humanities), among others. Among the professionals that need to be trained specifically to ensure the rights of people with disabilities, the UN CRPD cites the following stakeholders:

- professionals and staff working with persons with disabilities (for instance, public servants)
- administration of justice, including police and prison staff
- specialist staff (working with mobility aids, devices, and assistive technologies)
- teachers at all educational levels

¹ All of the countries participating in the ATHENA project are State Parties having ratified the Convention.

- health professionals
- habilitation and rehabilitation staff

The need for recommendations on how to translate the task of incorporating accessibility measures in all aspects of life into teachable skills at university level is therefore largely backed by the UN CRPD.

More recently, the 2030 Agenda for Sustainable Development has established 17 Sustainable Development Goals (henceforth SDG). The following subsection is devoted to how these relate to accessibility and universal design.

Sustainable development goals

A report linking the UN's SDGs with accessibility applications was published in 2018 under the title *Disability and Development Report: Realizing the Sustainable Development Goals by, for and with persons with disabilities*. The present section gathers some of the information from this report connecting SDGs to specific accessibility actions which need to be implemented to achieve these goals. For this desk review, we link the action to be undertaken with the fields of education and training involved.

Goals 1 and 2: Ending poverty and hunger for all persons with disabilities.

- Improve access to and accessibility of banking and other financial services, including mobile banking
 - Involved fields of education and training: Information and Communication Technologies; Services

Goal 3: Ensuring healthy lives and promoting well-being

- Identify and eliminate obstacles and barriers to accessibility in health-care facilities
 - Involved fields of education and training: Health and welfare; Engineering, manufacturing and construction

Goal 4: Ensuring inclusive and equitable quality education

- Explore online and smartphone crowdsourcing applications to obtain bottom-up information on the accessibility of schools for persons with disabilities
 - Involved fields of education and training: Education; Information and Communication Technologies

Goal 9, target 9.c: Increasing access to information and communications technology

- Raise awareness and enhance knowledge of ICT accessibility
- Involve persons with disabilities at every stage of ICT development
- Promote the principles of Universal Design in the mainstream ICT industry and the public sector
- Adopt national ICT accessibility policies and regulations
- Create dedicated focal points in relevant ministries or departments dealing with ICT accessibility
- Provide affordable Internet access for persons with disabilities
- Provide funding mechanisms to support the development of open-source software
- Involve all relevant stakeholders and increase funding to support Universal Design and low-cost ICTs for persons with disabilities
- Develop and publish comparable data on access to and use of ICTs disaggregated by disability as well as on accessibility of ICTs
 - Involved fields of education and training: Information and Communication Technologies; Business, administration and law

Goal 11: Making cities and communities inclusive and sustainable for persons with disabilities

- Ensure that national policies and laws on accessible housing, public infrastructure, transport and services are in place and implemented
- Develop national policies and laws that guarantee access to adequate and affordable housing for persons with disabilities
- Raise awareness on disability among communities and decision makers and create the enabling environment where persons with disabilities are included without discrimination and can participate equally in their communities
- Share knowledge and best practices and build capacity to implement measures promoting accessibility and inclusion
- Improve research and data to monitor, evaluate and strengthen urban development to be more accessible and inclusive for persons with disabilities
 - Involved fields of education and training: Business, administration and law; Engineering, manufacturing and construction

Goal 16: Promoting peaceful and inclusive societies for sustainable development, providing access to justice for all and building effective, accountable and inclusive institutions at all levels

- Ensure accessibility in courts and of legal documents
- Ensure accessibility of data and information held by the Government
 - Involved fields of education and training: Business, administration and law; Social sciences, journalism and information

As was the case in the CRPD, the SDGs put forward accessibility requirements in different aspects of life. Once again, in order for them to be applicable, higher education institutions need to implement training that allows future (law, education, ICT, infrastructure, communication and transportation) professionals and experts to facilitate accessible environments, products and services.

European context

In the European context, the justification of the introduction of universal design and accessibility in higher education curricula can be indirectly linked to recent legislation, to name a few EU Directives and priorities:

- [European Accessibility Act \(EAA\) Directive \(2019/882\)](#)

The European accessibility act (EAA) is a Directive (2019/882) adopted in April 2019. It aims to improve the functioning of the internal market for accessible products and services, by removing barriers created by divergent rules in Member States. It sets general minimum accessibility requirements for certain products and services. The Act covers the following products and services.

Products:

- Computers and operating systems
- Smartphones and other communication devices
- TV equipment related to digital television services
- ATMs and payment terminals (e.g., card payment machines in supermarkets)
- E-readers
- Ticketing and check-in machines

Services:

- Phone services
- Banking services
- E-commerce
- Websites, mobile services, electronic tickets and all sources of information for air, bus, rail and waterborne transport services
- E-books
- Access to audiovisual media services (AVMSD)
- Calls to the European emergency number 112

To support the accessibility requirements of the European Accessibility Act, the EU Commission launched [the standardisation Mandate 587](#). The European standardisation organisations, CEN-CENELEC-ETSI received a new request to

revise and develop new standards supporting the European Accessibility Act. The work is carried out as follows:

- Harmonized European Standard 301 549 Accessibility Requirements for ICT (Information and Communication Technologies) products and services. The responsible bodies are the CEN-CENELEC-ETSI Joint Working Group on eAccessibility and ETSI Technical Committee on Human Factors.
- Harmonized European Standard on Emergency Communications. The body responsible is the ETSI EMTEL technical committee.
- Harmonized European Standard 17210 on Built Environment. The body responsible is the CEN-CENELEC Joint Technical Committee 11.
- Harmonized Standard 17161 on Design for all. The body responsible is the CEN-CENELEC Joint Technical Committee 12.
- Harmonized Standard on accessibility of non-digital information related to products. The body responsible is the CEN-CENELEC Joint Technical Committee 12.
- Harmonized Standard for the accessibility of support services related to products and services. The body responsible is the CEN-CENELEC Joint Technical Committee 12.
- [Audiovisual Media Services Directive \(Directive 2018/1808\)](#)

The Audiovisual Media Services Directive (AVMSD) was adopted in 2018 as an update of the previous AVMS Directive 2010/13/EU which had a soft approach to media accessibility. The Directive creates an EU-level framework to coordinate national legislation on all audiovisual media.

The revised Directive 2018/1008 presents improvements in relation to the accessibility of audiovisual media services for persons with disabilities, and the prevention of discrimination on the grounds of disability in commercial audiovisual services.

The main accessibility provisions of the Directive are:

- Obligation to make audiovisual content continuously and progressively more accessible,
- Setting up of an online point of contact for questions and complaints
- Reporting obligations of media service providers and Member States
- Encouragement of accessibility plans
- Accessibility of emergency information

It lays down essential rules to create a level playing field for audiovisual media services, preserve cultural diversity, protect children and consumers, combat racial

and religious hatred and guarantee the independence of national media regulators. It coordinates EU-wide legislation on all audiovisual media, including both traditional TV broadcasters and on-demand video services.

All audiovisual media services have to respect the basic tier of obligations in the following areas:

- identification of media service providers
- prohibition of incitement to hatred
- accessibility for people with disabilities
- qualitative requirements for commercial communications
- sponsoring
- product placement

Stricter rules in the areas of advertising and protection of minors are foreseen for television broadcasts due to their impact on society.

- European Electronic Communications Code (EECC) Directive 2018/1972

The European Electronic Communication Code (EECC) Directive was adopted in 2018 and regulates electronic communications networks and services in the EU.

It sets an EU-level legal framework to coordinate national legislation on electronic communications networks and services, from the telephony services and the single European emergency number '112' to basic internet access that must now be considered as a universal service by EU countries.

The Code aims, among other things, to ensure the provision of good quality, affordable, publicly available electronic communication services to end-users. This also includes ensuring that end-users with disabilities enjoy access and choice to these services on an equal basis with others.

- [Web Accessibility Directive \(Directive \(EU\) 2016/2102\)](#)

The EU Web Accessibility Directive is a piece of EU law adopted in 2016 that applies in all EU countries, as well as in countries of the European Economic Area.

It aims to make public sector websites and mobile applications more accessible and to harmonise standards within the EU. Both websites and apps of the public sector should meet specific technical requirements set out in web accessibility standards in order to reduce barriers for developers of accessibility-related products and services and provide persons with disabilities with better access to online public services.

The directive requires:

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- an accessibility statement for each website and mobile app;
- a feedback mechanism so that users can flag accessibility problems or request access to inaccessible content;
- regular monitoring of public sector websites and apps by Member States and reporting on the results.

While the Web Accessibility Directive applies to websites and apps of public sector bodies, the EAA applies to the private sector and covers a wider range of products and services, including websites and mobile applications.

- [Public procurement \(Directive 2014/24/EU\)](#)

The Public procurement Directive was adopted in January 2014 and it establishes rules on the procedures for procurement by contracting authorities with respect to public contracts as well as design contests, whose value is estimated to be not less than the thresholds. Several provisions refer to persons with disabilities and accessibility:

- The new award criteria for the most advantageous economic tenders include specific references to accessibility for persons with disabilities and design for all users as part of the quality of a tender.
- Accessibility and design for all users' criteria become an obligation when drawing up technical specifications for all goods and services that are intended to be used by the public or staff.
- Public authorities can include employing persons with disabilities as a condition to award a contract.
- The provision on reserved contracts has been amended to go beyond sheltered workshops, and sheltered employment programmes and include economic operators that are aimed at the social and professional integration of disabled persons and disadvantaged persons which employ at least 30% of disabled or disadvantaged persons.

- [Marrakesh Treaty](#)

The Marrakesh Treaty was adopted in June 2013 and is formally called “the Marrakesh Treaty to Facilitate Access to Published Works for Persons who are Blind, Visually Impaired or Otherwise Print Disabled”. The Treaty removes legal barriers to copying books and other copyright-protected works into accessible formats (for example, Braille and digital audio). It also covers distribution among countries who are party to the Treaty.

The European Union adopted a [Directive \(EU\) 2017/1564](#) and [Regulation \(EU\) 2017/1563](#) in 2017 to implement the Marrakesh Treaty into European Law.

- The Directive

The Directive on certain permitted uses of certain works and other subject matter protected by copyright and related rights for the benefit of persons who are blind, visually impaired or otherwise print-disabled establishes a mandatory exception to copyright and related rights.

- The Regulation

The Regulation provides for a copyright exception that permits the cross-border exchange of accessible format copies of certain works and subject matter that are ordinarily protected by copyright and related rights. This is for the benefit of persons who are blind, visually impaired or otherwise print-disabled. The Regulation will permit the cross-border exchange of copies made under the exception between the EU and third countries that are parties to the Treaty.

- [Common Provision Regulation 2021/1060 \(CPR\)](#)

The Common Provisions Regulation (CPR) is a piece of overarching legislation that applies to various funding programmes. It outlines rules that must be followed for the use of funds and the criteria by which projects must adhere to be eligible for EU funding. The CPR sets out common provisions for seven shared management:

1. the Cohesion Fund, the European Maritime funds and Fisheries Fund,
2. the European Regional Development Fund,
3. the European Social Fund Plus,
4. the Asylum and Migration Fund,
5. the Border Management,
6. Visa Instrument,
7. Internal Security Fund.

Article 67 outlines the ways in which managing authorities shall go about selecting EU funded operations. The criteria and the procedures should be non-discriminatory and must “ensure accessibility to persons with disabilities” as well as gender equality. This means that for all funding covered by the CPR, managing authorities must consider the impact it will have on accessibility for persons with disabilities and systematically turn away anything that perpetuates barriers.

Article 6 on partnership and multi-level governance explains how different stakeholders are included in selecting and monitoring how funds are used. It explains that this process should include “relevant bodies representing civil society, such as environmental partners, non-governmental organisations, and bodies responsible for promoting social inclusion, fundamental rights, rights of persons with disabilities, gender equality and non-discrimination”.

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Article 4 on policy objectives emphasises the need to use the funds to make Europe more inclusive. It also stresses that the Country-Specific Recommendations from the European Semester process should be taken into account in how the funds are spent.

Recital 5 reads: “Member States should “respect the obligations of the UN Convention on the Rights of Persons with Disabilities and ensure accessibility in line with its article 9 and in accordance with the Union law harmonising accessibility requirements for products and services.”

Recital 6 reads: “The Funds should not support actions that contribute to any form of segregation or exclusion, and, when financing infrastructure, should ensure the accessibility for persons with disabilities.”

For ATHENA, the next step is to link these regulations back to the inclusion of different areas of accessibility in higher education curricula. In this regard, it is important to highlight that the Bologna Process, launched with the Bologna Declaration of 1999, is nowadays implemented in 49 States which define the European Higher Education Area (EHEA). The Bologna Process calls for an inclusive and innovative approach to learning and teaching, for integrated transnational cooperation in higher education, research and innovation, and for securing a sustainable future through higher education. The vital role of higher education in an inclusive society is also acknowledged by the Renewed EU agenda for higher education (COM/2017/0247 final), which establishes “building inclusive and connected higher education systems” as one of its priorities.

In terms of institutional reports, in the *European Semester 2022 mainstreaming disability equality report*, several countries (Belgium, Denmark, Poland and Romania) identify higher education as a challenge, either in terms of accessibility to higher education for students with disabilities or (in the case of Poland) in terms of development of the higher education accessibility programme. Some of the UN Recommendations to Member States under Article 24 CRPD (education) also follow this line: “Incorporate inclusive education training into higher education curricula for trainee teachers, and into training programmes for current teaching staff, with an adequate budget” (recommendation to Greece).

Additionally, the existing EU’s Digital Competence Framework for Citizens (DigComp) identifies 21 competences in five key areas describing what it means to be “digitally savvy”. DigCom already includes accessibility under its Problem solving key component, as presented next:

5.2 Identifying needs and technological responses

To assess needs and to identify, evaluate, select and use digital tools and possible technological responses to solve them. To adjust and customise digital environments to personal needs (e.g. accessibility).

More specifically, the *Digital Competence Framework for Citizens* updated report from 2022 (DigComp 2.2) includes examples of knowledge (K), skills (S) and attitudes (A) where accessibility is integrated. Some examples under the Information and data literacy competence area are the following:

(A) Concerned that much online information and content may not be accessible to people with a disability, for example to users who rely on screen reader technologies to read aloud the content of a web page.

Under the Communication and collaboration competence area:

(K) Aware which communication tools and services (e.g. phone, email, video conference, social network, podcast) are appropriate in specific circumstances (e.g. synchronous, asynchronous), depending on the audience, context and purpose of the communication. Aware that some tools and services also provide an accessibility statement.

(K) Aware of accessibility requirements when communicating in digital environments so that communication is inclusive and accessible for all users (e.g. for people with disabilities, older people, those with low literacy, speakers of another language).

(A) Inclined to use appropriate digital tools for fostering collaboration between the members of a team while, at the same time, ensuring digital accessibility.

Under the Digital content creation competence area:

(K) Aware that “digital accessibility” means ensuring that everyone, including people with disabilities, can use and navigate the internet. Digital accessibility includes accessible websites, digital files and documents, and other web-based applications (e.g. for online banking, accessing public services, and messaging and video-calling services).

(S) Can use tools and techniques to create accessible digital content (e.g. add ALT text to images, tables and graphs; create a proper and well-labelled document structure; use accessible fonts, colours, links) following official standards and guidelines (e.g. WCAG 2.1 and EN 301 549).

(A) Inclined to follow official standards and guidelines (e.g. WCAG 2.1 and EN 301 549) to test the accessibility of a website, digital files, documents, e-mails or other web-based applications that one has created.

(S) Knows how to use tools and applications (e.g. add-ons, plug-ins, extensions) to enhance digital accessibility of digital content (e.g. adding captions in video players to a recorded presentation).

(A) Considers ethics (including but not limited to human agency and oversight, transparency, non-discrimination, accessibility, and biases and fairness) as one of the core pillars when developing or deploying AI systems.

Under the Problem solving competence area:

(K) Knows technical approaches that can improve the inclusiveness and accessibility of digital content and services, e.g. tools such as magnification or zoom and text-to-voice functionality.

(K) Aware that AI-driven speech-based technology enables the use of spoken commands that can enhance the accessibility of digital tools and devices (e.g. for those with mobility or visual limitations, limited cognition, language or learning difficulties), however, languages spoken by smaller populations are often not available, or perform worse, due to commercial prioritisation.

(S) Knows how to choose assistive tools to better access information and content online (e.g. screen readers, voice recognition tools), and to take advantage of voice output options to produce speech (e.g. to be used by individuals who have limited or no means to communicate orally).

In the next section, each of the countries in the ATHENA project is assessed in terms of accessibility-related legislation and transposition of European Directives.

Country-specific context

A brief legislative overview of each country is presented next, focusing on the transposition of UNCRPD, on legislative documents that include accessibility and universal design in the last 10 years, and on key legislation on the inclusion of universal design and accessibility in higher education.

Austria

Austria signed the Convention on the Rights of Persons with Disabilities (CRPD) and the Optional Protocol on 30 March 2007 in New York. The Parliament ratified both

the Convention and the protocol in July 2008, with the ratification deed deposited by the Secretary-General of the UN on 26 September 2010. As per Article 45(2), both instruments entered into force for Austria on 26 October 2008 and were published in the Federal Law Gazette on 23 October 2008 (BGBl III Nr. 155/2008). Following a state review in 2013, a working group, inclusive of individuals with disabilities and their representative organisations, revised the German translation of the CRPD. The updated version was officially published in the Federal Law Gazette in June 2016 (BGBl III Nr. 105/2016). For the purposes of ATHENA, article 9.2.c of the CRPD is covered in Austria: "States Parties shall also take appropriate measures [...] to provide training to relevant stakeholders on accessibility issues for persons with disabilities". The law is available under the following link: [RIS Dokument \(bka.gv.at\)](#)

The [National Action Plan on Disability \(2022–2030\)](#) aims to implement the Convention on the Rights of Persons with Disabilities in Austria. The National Action Plan emphasises the importance of continuous efforts to raise awareness among different groups, to promote awareness and to integrate disability-related competences into education. Chapter 8 deals with "Awareness-raising and information" and covers 1) research, 2) statistics, 3) reports, 4) public services and information, and 5) awareness-raising, education and training.

For the research section (8.1), one objective is the development of intelligent technical products based on the principle of universal design. The last section (8.5) of the National Action Plan outlines the importance of awareness-raising, education, training and retraining to meet the requirements of the UNCRPD. The National Action Plan on Disability emphasises the importance of continuous efforts to sensitise different groups, to promote awareness and to integrate disability-related competences into training regulations. The National Action Plan on Disability stresses the need for comprehensive training in different professional groups, including the judiciary, the executive, the health and care sector, the civil service, education and social work. Objectives and indicators include taking into account the different needs of the target groups, using the expertise of self-advocates and disability organisations, and addressing gender issues. The plan aims to raise awareness of disability rights, protection against discrimination and disability mainstreaming through regular training. Specific indicators include tracking the number of training courses, participation rates and the inclusion of mandatory elements in policies and regulations. There is also a focus on raising awareness among policy makers and evaluating training curricula for specific professional groups with regard to disability awareness. Proposed measures include the regular review and development of training, the design and delivery of disability-focused training and the participatory development of images of people with disabilities in advertising. The plan also outlines initiatives such as internal training events for the

judiciary, events for law enforcement personnel and the use of e-learning tools for officials on relevant topics.

Furthermore, in May 2020, Austria published a digital action plan for 2020-2024. It outlines five key areas, three goals, and seven principles to guide digital development. A report on [“Digitalisation and digital transformation in Austria”](#) developed with the European Commission and published in June 2021 found the following related to education and also related to higher education: While the plan covers various aspects such as the economy, digital state, education, health, security, and infrastructure, it lacks explicit focus on persons with disabilities. In contrast, the Digital Roadmap Austria emphasizes inclusion for persons with disabilities, particularly in the field of 'integration and inclusion.' The Ministry of Education's introduction of compulsory digital education for secondary schools excludes students with special educational needs. The 8-Point Plan for Digital Learning, a response to the COVID-19 crisis, allocates additional funds but does not address the specific needs of students with disabilities. Generally speaking, government-led strategies on digitalization are minimally disability-inclusive, and existing disability strategies only marginally consider the challenges of digital transformation. This report highlights that research indicates that students with disabilities are excluded from compulsory digital education due to curriculum limitations and unclear responsibility for implementation in educational departments.

Legislative documents have been retrieved by [RIS Legal Information System \(bka.gv.at\)](#) of the Republic of Austria as well as by the Disability online Tool of the European Commission [DOT COM tool](#). For Austria the following legislative documents are relevant:

Table 6. Relevant legislative documents (Austria)

Legislative document	(Narrow and detailed) fields of education and training
Web Accessibility Act (in German)	Web Accessibility and Mobile Applications, Public Sector
Federal act on the organisation of universities and their studies (Universities Act 2002) (in German/English) Federal Ministry for Social Affairs, Health, Care and Consumer Protection, Guideline for personal assistance at the workplace (which includes personal assistance in higher education) (in German)	Higher Education Reasonable accommodations including assistive technology and ICT

Curriculum for special schools for deaf children (in German)	Sign Language
KommAustria Act, the ORF Act and the Private Radio Act	Communications; Audio-visual techniques and media production
Federal Disability Equality Act (in German) Guidelines for accessible public transport provided by the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (in German)	Transportation
National Action Plan on Disability 2022–2030 (in German)	General references to accessibility across sectors Voting (accessibility in the means of escort for elections) Education Built Environment

Czechia

The Czech Republic signed the UN Convention on the Rights of Persons with Disabilities on 30 March 2007 and ratified it on 28 September 2009. On the basis of Article 10 of the Constitution of Czechia, the Convention became part of the Czech legal order after its promulgation on 12 February 2010. The Czech Republic also signed the Optional Protocol on 30 March 2007, which entered into force for the Czech Republic on 23 September 2021.

The Convention was promulgated in the Collection of International Treaties under No. 10/2010 Coll. This Communication No 10/2010 Coll. is replication of the convention's articles (including Article 9.2.c.) and is available at <https://www.zakonyprolidi.cz/ms/2010-10> (in Czech).

Legislative documents have been retrieved from the [DOT COM tool](#) of the [European Disability Expertise \(EDE\)](#) and from the page [Legislation](#) of *Association of the service providers for the students with specific needs at universities*, that can be considered as reliable and verified source.

For Czechia, the following legislative documents are relevant:

Table 7. Relevant legislative documents (Czechia)

Legislative document	(Narrow and detailed) fields of education and training
Act No. 198/2009 Coll. (Sec. 1–7) on equal treatment and on legislative means of protection against discrimination and amendments to certain other acts (Anti-Discrimination Law)	General references to accessibility across sectors, human rights, etc.
Act No. 155/1998 Coll. (Sec. 7–10) on the communication systems of persons with hearing loss as amended by Act No. 384/2008 Coll. (Law on the communication systems)	Communications
Act No. 121/2000 Coll. on copyright or related rights (Copyright Law)	Access to information
Act No. 99/2019 Coll. Act on Accessibility of Websites and Mobile Applications and on Amendments to Act No. 365/2000 Coll., on Public Administration Information Systems and on Amendments to Certain Other Acts, as amended	Web Accessibility and Mobile Applications, Public Sector
Decree No. 398/2009 Coll. about general technical requirements securing barrier-free use of buildings (Regulation on barrier-free use of buildings)	Built environment
Building Act No. 183/2006 Coll.	Built environment
Act No. 155/1998 Coll. Act on communication systems for deaf and deaf-blind persons	Sign language, communication
Convention for the Protection of the Diversity of Cultural Expressions	Education

Legislation on the inclusion of universal design and accessibility topics in higher education is a part of the Act No. 111/1998 Coll. about universities and on change and amendments to other acts as amended by Act No. 137/2016 Coll. (**Higher Education Act**). The accessibility of HE institutions is not specifically defined by the law. The only relevant resolutions include Sec. 1, which vaguely refers to the accessibility of university education in compliance with principles of democracy; Sec. 21, which mentions the obligation of schools to publish information of accessibility;

and Sec. 78, which also vaguely mentions the obligations a school has in relation to the persons with disabilities when it applies for institutional accreditation.

A specific regulation, which has the character of an implementing decree to the cited laws are **Rules for providing support to public universities by the Ministry of Education, Youth and Sports, Appendix No. 3 Financing increased costs connected with educating students with special needs.**

Worth mentioning is also the **National Plan for the Promotion of Equal Opportunities for Persons with Disabilities 2021-2025**, which has a total of 17 points. Accessibility is addressed e.g. in area 2 (accessibility of buildings, transport, and roads), area 3 (accessibility of information and public services) and area 8 (accessibility of education).

Cyprus

The Republic of Cyprus signed the UN Convention on the Rights of Persons with Disabilities on 30 March 2007 and ratified it on 27 June 2011. The Law for the ratification of the Convention was approved by the Council of Ministers on 2 December 2010 and submitted to the House of Representatives. The ratification law for both the Convention and the Optional Protocol was approved on 4 March 2011. The Convention entered into force for the Republic of Cyprus from 27 July 2011. The Law that holds the title: The Convention on the Rights of Persons with Disabilities and Related Matters (Ratification) Law of 2011 (L. 8(III)/2011) and is available in this link: https://www.cylaw.org/nomoi/indexes/2011_3_8.html. The Law is a replication of the convention's articles.

Legislative Documents that include accessibility and universal design have been retrieved from the [DOT COM tool](#) of the [European Disability Expertise \(EDE\)](#) as well as the website of [AccessibleEU Centre](#), [under digital library](#), which lists references, regulations, legislation and other documents relevant to disability and universal design in EU country members. For Cyprus the following legislative documents exist:

Table 8. Relevant legislative documents (Cyprus)

Legislative document	(Narrow and detailed) fields of education and training
The Accessibility of Websites and Mobile Applications of Public Sector Organizations Law of 2019 (N. 50(I)/2019)	Web Accessibility and Mobile Applications, Public Sector

The Accessibility of Products and Services Law of 2024 (N. 57(I)/2024)	Product and Services including communications, transport, information and other fields identified in the EAA
Regulation of Roads and Buildings Law (Chapter 96) and the Regulation 61H – Regulation of Roads and Buildings Law (Reg. 61.H)	Built Environment
The Law of 2017 on the Conduct of the All-Cypriot Entrance Examinations to Higher Education Institutions (HEIs) of Cyprus and Greece (14(I)/2017)	Higher Education Reasonable accommodations including assistive technology and ICT
The Cypriot Sign Language Recognition Law of 2006 (66(I)/2006)	Sign Language
Regulation of Public Electronic Communications and Postal Services Law of 2004 (Law N. 112 (I) / 2004)	Communications
Radio and Television Organisations Law of 1998 (N. 7 (I) / 1998)	Audio-visual techniques and media production;
Vehicle Type Approval Law of 2005 (N. 61 (I) / 2005)	Transportation
Persons with Disabilities Law of 2000 (N. 127 (I) / 2000)	General references to accessibility across sectors
Laws on Election of Members of the House of Representatives of 1992 (N. 72 / 1979) and Election Law of 1959 (for the President and Vice-President of the Republic) (N. 37 / 1959)	Voting (accessibility in the means of escort for elections)
Education of Children with Special Needs Law of 1999 (N. 113 (I) / 1999-2020)	Education

There is no specific legislation devoted to the inclusion of universal design and accessibility topics in higher education. The only relevant legislation is the Law of 2017 on the Conduct of the All-Cypriot Entrance Examinations to Higher Education Institutions (HEIs) of Cyprus and Greece (14(I)/2017) which actually refers to the right for reasonable accommodations, without specifically identify accessibility. There

is reference to ‘means according to students’ needs’ implying assistive technology and probably accessibility.

Spain

Spain signed and ratified the UN CRPD including the optional protocol in 2007 and implemented Law 26/2011 (to adapt regulations to the International Convention on the Rights of Persons with Disabilities) in 2011. This law is the transposition of the UN CRPD. It does not, however, explicitly address the particularities of “training for stakeholders on accessibility issues facing persons with disabilities”.

More generally, in terms of current legislation regarding accessibility in Spain, the Spanish Center for Documentation and Research on Disability (CEDID)² provides a database according to which 205 current legislative documents (Laws, Royal Decrees, Resolutions, etc.) cover the topic of accessibility. In the following table, the search is narrowed down to a selection of the most relevant Laws, Royal Decrees and Royal Decree-Laws of the last ten years (2013-2023) for the purposes of this desk review. The list is provided together with the related fields of education and training that have to deal with accessibility.

Table 9. Relevant legislative documents (Spain)

Legislative document	(Narrow and detailed) fields of education and training
Law 8/2013, of 26 June, on urban rehabilitation, regeneration and renewal	Architecture and construction: Architecture and town planning
General Law on the Rights of Persons with Disability, approved by Royal Decree 1/2013	Engineering, manufacturing and construction; Information and Communication Technologies; Law; Transportation; Arts and Humanities

² Retrieved from: <https://www.cedid.es/es/documentacion/legislacion/>

Royal Decree 1112/2018, on the accessibility of websites and mobile applications in the public sector	Information and Communication Technologies
Law 5/2019, of 15 March, on real estate credit agreements.	Law
Royal Decree-Law 25/2020, of 3 July 2020, on urgent measures to support economic recovery and employment	Services: Tourism
Law 10/2021, of 9 July, on remote working	Business, administration, and law
Royal Decree (RD) 822/2021, of 28 September, which establishes the organisation of university education and the procedure for quality assurance	Education
General Telecommunications Law 11/2022	Information and Communication Technologies; Law
Royal Decree 1084/2015, of 4 December, setting out the enabling regulations for Cinema Law 55/2007 Law 13/2022, of 7 July, General Audiovisual Communication	Audio-visual techniques and media production; Arts and Humanities
Organic Law 2/2023 of 21 March on Spanish Universities	Education

Aside from this, the European Commission's 2021 report *Digitalisation and digital transformation in Spain. Implications for persons with disabilities* includes the accessibility of digital environments to persons with disabilities as part of the agenda España Digital and the Plan for the Digitalisation of Spain's Public Administration: 2021-2025. The report also alludes to the Spanish Disability Strategy Action Plan 2014-2020, which states "the need to include a subject on "universal accessibility" in curricula". The focus of this latter plan is largely on information and communication technologies.

Finally, in terms of legislation on the inclusion of universal design and accessibility in higher education, there are two key recent documents: the Royal Decree 822/2021 and the Organic Law 2/2023. They both guarantee the accessibility of all learning resources (laboratories, libraries, virtual campus...) in higher education. Additionally, the Royal Decree 822/2021 also establishes that whenever a new official curriculum is designed, it should be guided by democratic values and the Sustainable

Development Goals, mentioning four key aspects: a) human rights, fundamental rights, and democratic values, respecting diversity and equity and avoiding discrimination; b) respect to gender equality and non-discrimination, where explicit mention of disability is made; c) “respect to universal accessibility and universal design”, with a direct mention of the General Law on the Rights of Persons with Disability, approved by Royal Decree 1/2013, and d) sustainability and climate change.

National transpositions table

As a summary of all previous subsections, the following Table gathers the transposed EU Directives mentioned in Section 2.

Country	EU Directive	Transposition
Austria	European Accessibility Act (Directive 2019/882)	<p>The transposition of the EAA into national law was conducted by the Web Accessibility Act (07/2019). Web-Zugänglichkeits-Gesetz, European Legislation Identifier (ELI): https://www.ris.bka.gv.at/eli/bgbl/I/2019/59/20190722</p> <p>With the Telecommunications Act 2021 (10/2021), several laws were changed, such as the KommAustria Act and the Audiovisual Media Services Act. https://www.ris.bka.gv.at/eli/bgbl/I/2021/190/20211028</p> <p>With the federal Accessibility Act and the amendment of the Ministry of Social Affairs Service Act, the European Accessibility Act was once again transposed at the federal level and the existing Ministry of Social Affairs Service Act was amended. Barrierefreiheitsgesetz - BaFG (07/2023): https://www.ris.bka.gv.at/eli/bgbl/I/2023/76/20230719</p>
	Audiovisual Media Services Directive (Directive 2018/1808)	<p>Austria has transposed the AVMSD 2018/1808 by amending the federal Audiovisual Media Services Act, the KommAustria Act (2001), the ORF Act and the Private Radio Act in 2019 and 2020 and additionally installed a monitoring. https://www.ris.bka.gv.at/eli/bgbl/I/2019/47/20190612 https://www.ris.bka.gv.at/eli/bgbl/I/2020/150</p> <p>Audiovisuelle Mediendienste-Gesetz (AMD-G):</p>

		https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=20001412&FassungVom=2023-12-20 KommAustria-Gesetz (KOG): https://www.ris.bka.gv.at/GeltendeFassungDatumsauswahl.wxe?Abfrage=Bundesnormen&Gesetzesnummer=20001213&FassungVom=2023-12-20 Source: https://rm.coe.int/avmsd-transposition-info-sheet-at-/1680a4648f
	Directive (EU) 2018/1972 of the European Parliament and of the Council of 11 December 2018 establishing the European Electronic Communications Code	In 2018, four of the five main directives of European telecommunications law were merged and revised into a single, new basic directive – the European Electronic Communications Code (EECC). This new legal framework is implemented in Austrian law with the Telecommunications Act 2021. Telekommunikationsgesetz (11/2021): https://www.ris.bka.gv.at/eli/bgbl/I/2021/190/20211028 Federal source: https://www.bmf.gv.at/themen/telekommunikation-post_2/telekommunikationsrecht-politik/neues-tkg.html KommAustria-Gesetz (KOG): https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=20001213
	Web Accessibility Directive (Directive (EU) 2016/2102)	In July 2019, Austria enacted the Web Accessibility Act (WZG), which mandates public bodies and institutions to ensure the accessibility of their websites, aligning with the requirements of the Web Accessibility Directive (EU Directive 2016/2102). Web-Zugänglichkeits-Gesetz (WZG - July 22th, 2019): https://www.ris.bka.gv.at/eli/bgbl/I/2019/59/20190722

		<p>Consequently, between 2017 and 2020 the following laws on provincial level were enacted:</p> <p>Burgenland:</p> <ul style="list-style-type: none"> • https://www.ris.bka.gv.at/eli/lgb/BU/2018/39/20180716 • https://www.ris.bka.gv.at/eli/lgb/BU/2019/41/20190612 <p>Kärnten:</p> <ul style="list-style-type: none"> • https://www.ris.bka.gv.at/eli/lgb/KA/2019/25/20190415 <p>Niederösterreich:</p> <ul style="list-style-type: none"> • https://www.ris.bka.gv.at/eli/lgb/NI/2017/24/20170313 • https://www.ris.bka.gv.at/eli/lgb/NI/2018/76/20181126 • https://www.ris.bka.gv.at/eli/lgb/NI/2019/76/20190910 <p>Oberösterreich:</p> <ul style="list-style-type: none"> • https://www.ris.bka.gv.at/eli/lgb/OB/2018/78/20181031 <p>Salzburg:</p> <ul style="list-style-type: none"> • https://www.ris.bka.gv.at/eli/lgb/SA/2018/82/20181122 • https://www.ris.bka.gv.at/eli/lgb/SA/2020/28/20200402 <p>Steiermark:</p> <ul style="list-style-type: none"> • https://www.ris.bka.gv.at/eli/lgb/ST/2019/50/20190626 <p>Tirol:</p> <ul style="list-style-type: none"> • https://www.ris.bka.gv.at/eli/lgb/TI/2018/150/20181227 <p>Vorarlberg:</p> <ul style="list-style-type: none"> • https://www.ris.bka.gv.at/eli/lgb/VO/2019/8/20190114 <p>Wien:</p> <ul style="list-style-type: none"> • https://www.ris.bka.gv.at/eli/lgb/WI/2018/39/20180706 <p>Regarding monitoring and enforcement, responsibilities were assigned to official bodies in all nine provinces as well as on federal level (Austrian Research Promotion Agency- FFG). https://www.ffg.at/</p>
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	Public procurement (Directive 2014/24/EU)	<p>The major revision of the public procurement law (Vergaberechtsreformgesetz 2018), which implements the Directive 2014/24/EU, came into force on August 21st, 2018. Previously, procurement was regulated by the public procurement code (Bundesvergabegesetz, BVergG 2006) and the public procurement code for security and defense contracts (Bundesvergabegesetz Verteidigung und Sicherheit, BVergGVS), which were both operational at the federal level. Now the relevant provisions are split between the public procurement code (BVergG 2018), the public procurement code for concessions (Bundesvergabegesetz Konzessionen, BVergGK 2018), and the old BVergGVS, which remains unchanged.</p> <p>Vergaberechtsreform 2018, official publication: https://www.ris.bka.gv.at/eli/bgbl/I/2018/65/20180820</p> <p>The following links refer to the sources for amendments on provincial level (2017/2018). Burgenland https://www.ris.bka.gv.at/eli/lgbl/BU/2018/43/20180821 Kärnten https://www.ris.bka.gv.at/eli/lgbl/KA/2017/18/20170512 Niederösterreich https://www.ris.bka.gv.at/eli/bgbl/I/2018/65/20180820 Oberösterreich https://www.ris.bka.gv.at/eli/lgbl/OB/2018/77/20181004 Salzburg https://ris.bka.gv.at/eli/lgbl/SA/2018/63/20180827 Steiermark https://www.ris.bka.gv.at/eli/lgbl/ST/2018/62/20180709 Tirol https://www.ris.bka.gv.at/eli/lgbl/TI/2018/94/20180821 Vorarlberg https://www.ris.bka.gv.at/eli/lgbl/VO/2018/41/20180803 Wien https://www.ris.bka.gv.at/eli/lgbl/WI/2018/55/20181109</p>
Czechia	European Accessibility Act (Directive 2019/882)	Act No. 424/2023 Coll., on Requirements for Accessibility of Certain Products and Services

	Audiovisual Media Services Directive (Directive 2018/1808)	<p>It is referred from several Acts, e.g.:</p> <ul style="list-style-type: none"> • Act No. 132/2010 Coll. • Act on on-demand audiovisual media services • Act No. 231/2001 Coll. • Act on the operation of radio and television broadcasting <p>For the complete list see 32018L1808</p>
	Directive (EU) 2018/1972 of the European Parliament and of the Council of 11 December 2018 establishing the European Electronic Communications Code	<p>It is referred from several Acts, e.g.:</p> <ul style="list-style-type: none"> • Act No. 127/2005 Coll. • Act on Electronic Communications <p>For the complete list see 32018L1972</p>
	Web Accessibility Directive (Directive (EU) 2016/2102)	<p>Act No. 99/2019 Coll.</p> <p>Act on Accessibility of Websites and Mobile Applications and on Amendments to Act No. 365/2000 Coll., on Public Administration Information Systems and on Amendments to Certain Other Acts, as amended</p>
	Public procurement (Directive 2014/24/EU)	Act No. 134/2016 Coll. Act on Public Procurement
	Regulation 1107/2006 concerning the rights of disabled persons and persons with reduced mobility when travelling by air	<p>It is referred from several Acts, e.g.:</p> <ul style="list-style-type: none"> • Act No. 49/1997 Coll. • Civil Aviation Act <p>For the complete list see 32006R1107</p>
Cyprus	European Accessibility Act (Directive 2019/882)	The Accessibility of Products and Services Law of 2024 (N. 57(I)/2024)

	Audiovisual Media Services Directive (Directive 2018/1808)	Harmonisation of the Radio and Television Organisations Law of 1998 (N. 7 (I) / 1998)
	Directive (EU) 2018/1972 of the European Parliament and of the Council of 11 December 2018 establishing the European Electronic Communications Code	Partly harmonised in Regulation of Public Electronic Communications and Postal Services Law of 2004 (Law N. 112 (I) / 2004 (to be further amended)
	Web Accessibility Directive (Directive (EU) 2016/2102)	The Accessibility of Websites and Mobile Applications of Public Sector Organizations Law of 2019 (50(I)/2019)
	Public procurement (Directive 2014/24/EU)	Law for the Regulation of Public Procurement Procedures and Related Matters of 2016 (73(I)/2016) (last amendment 2022)
	Regulation 1107/2006 concerning the rights of disabled persons and persons with reduced mobility when travelling by air	Under the Built Environment law (for airports: Regulation of Roads and Buildings Law (Chapter 96) and the Regulation 61H – Regulation of Roads and Buildings Law (Reg. 61.H) The Civil Aviation Law of 2002 ((213(I)/2002) (last amended 2020) is referring to Regulation EC 1107/2006 with respect to the fees for funding the support and assistance for persons with disabilities that travel by air but does not make specific reference to accessibility requirements.
Spain	European Accessibility Act (Directive 2019/882)	Law 11/2023 of 8 May 2023 on the transposition of European Union Directives on the accessibility of certain products and services, migration of highly qualified persons, taxation and digitalisation of notarial and registry actions, and amending Law 12/2011 of 27 May on

		civil liability for nuclear damage or damage caused by radioactive materials
	Audiovisual Media Services Directive (Directive 2018/1808)	Law 13/2022, of 7 July, General Audiovisual Communication
	Directive (EU) 2018/1972 of the European Parliament and of the Council of 11 December 2018 establishing the European Electronic Communications Code	General Telecommunications Law 11/2022
	Web Accessibility Directive (Directive (EU) 2016/2102)	Royal Decree 1112/2018, on the accessibility of websites and mobile applications in the public sector
	Public procurement (Directive 2014/24/EU)	Royal Decree-Law 3/2020 of February 4 on urgent measures by which various directives of the European Union in the field of public procurement in certain sectors are incorporated into the Spanish legal system; of private insurance; of pension plans and funds; in the tax field and tax litigation
	Regulation 1107/2006 concerning the rights of disabled persons and persons with reduced mobility when travelling by air	Royal Decree-Law 3/2020 of February 4 on urgent measures by which various directives of the European Union in the field of public procurement in certain sectors are incorporated into the Spanish legal system; of private insurance; of pension plans and funds; in the tax field and tax litigation

Annex 2. Focus Groups Supporting Documents

2.1. Focus group protocol

The aim of this document is to have a shared understanding of what a focus group is and provide the templates for preparing the focus group and reporting on its results. This document is adapted from the protocol of the project TRACTION Opera co-creation for a social transformation and Billups's chapter (2021) "Focus group moderator guides" from Qualitative data collection tools: Design, development, and applications.

What is a focus group?

A focus group is "a form of group interview in which: there are several participants (in addition to the moderator/facilitator); there is an emphasis in the questioning on a particular fairly tightly defined topic; and the accent is upon interaction within the group and the joint construction of meaning" (Bryman, 2012: 502). The key to focus groups lies in the *interaction* of the participants.

First, we describe the moderator's role, the number of participants, the study setup, and the data collection process. Then we describe the required preparation for a focus group, and the focus group protocol.

Focus groups are run by a moderator (also called a facilitator). They are expected to guide each session but not be too intrusive. In ATHENA, the focus groups will be conducted by a moderator who is a member of the project. During the session, the moderator ensures that every member of the focus group contributes equally to the discussion and prevents some participants from dominating the conversation.

Focus groups can range between 4 and 10 participants depending on the type of activity. Focus groups that include design requirement generation and co-creation typically range between 4-6 people. In ATHENA, we aim to include 4-6 participants per focus group. As there are normally no-shows, we strongly encourage partners to invite more.

The expected length of the ATHENA focus group will be 60 minutes.

Focus groups are traditionally conducted face-to-face. However, online focus groups can also provide valuable and insightful data. During the ATHENA project, we will develop both in-person and online focus groups depending on the partners' needs and availability.

Focus groups are a qualitative method. In ATHENA there will always be a note-taker present during the session. The note-taker will be in charge of writing down the main points and creating the main conclusions to be approved at the end of the session.

Additionally, partners may want to record the audio and transcribe it automatically, although this is not compulsory.

Before the focus group

For each focus group, the following decisions need to be made:

- Goal: what is the goal of the focus group.
- Focus group type (shared/specific). If specific, area of knowledge.
- Participant pool: who will participate, and how many people should be included in each focus group.
- Recruitment process: how will participants be contacted.
- Timeline: when the focus group will take place, and when the materials should be ready.
- Place: where the focus group will take place (e.g. physical space, online).
- Language and accessibility: what language(s) the test will take place in, and whether translation and accessibility support need to be included.
- Materials: what physical/digital materials should be ready.
- Preparatory work: whether and what prep materials should be done by participants.
- Guiding questions: what questions and activities will guide the session. This will be based on the agreed questions decided by project partners.

Each partner will fill in a protocol using the template in Annex 2. The goal and guiding questions will be shared across focus groups in ATHENA.

During the focus group

Focus groups in ATHENA should be conducted using the following steps:

Introduction (5 minutes)

Moderator introduces themselves and the note-taker, and thanks participants for coming to the study.

Moderator briefly explains the project, the goal and procedure of the focus group.

Moderator explains participants the ethical forms: information sheet and consent form.

Moderator describes the type of data that will be collected (e.g. audio, video, notes), that this data will be stored confidentially, and that all data that is collected and published will not directly identify participants.

Moderator describes the format in which the information will be published or available (e.g. article, report, publication, website).

Participants are asked to read the form and ask questions, and then are asked to consent to the study. Forms should be provided in an accessible format and language, and participants should be given enough time to read and understand the form before consent. Participants should also be told that they can withdraw consent at any time during the study.

Moderator asks participants to fill in a short questionnaire about their profile. This questionnaire will ask about: gender, area of expertise, years of experience, involvement with accessibility, leadership roles. Focus group participants should be provided with help where needed.

Participants introduce their names briefly. Moderator thanks participants and asks them to speak one at a time during the session. The moderator emphasizes that there are no right or wrong opinions, and that everyone's views are important.

Focus group discussion (40 minutes)

The moderator facilitates the discussion using the agreed guiding questions. The moderator directs the discussion, encouraging participants to interaction, and to discuss their opinions in a friendly and comfortable tone. As participants discuss each topic, the moderator remains as unobtrusive as possible.

Suggested guiding questions: Focus group on shared skills

Introductory questions

- Can you introduce yourself, focusing on your expertise in teaching and in coordinating higher education programmes?

Context & external evaluation

- Our project focuses on accessibility and universal design across higher education curricula, mostly BA and MA programmes. How do you define accessibility and universal design (especially with regard to your professional background)?
- Are you aware of any requirements or recommendations regarding the inclusion of accessibility and universal in BA or MA programmes in your country?

- Do external quality evaluation agencies assess this aspect when evaluating your programmes? (If yes, how?)

Curriculum

- How would you recommend including accessibility and universal design across BA and MA programmes? If you have any experiences, please share them. I am focusing on shared aspects, not aspects related to a specific area of knowledge.
- Do you think there are shared knowledge, skills and competences that can be included across different areas of knowledge in relation to accessibility and universal design? (Note to moderator: If yes, which ones? If no, why not? Try to focus on shared knowledge, skills and competences, all aspects by asking follow-up questions. An explanation of these terms will be agreed).
- Do you think there are shared learning outcomes that can be included across different areas of knowledge in relation to accessibility and universal design? (Note to moderator: If yes, which ones? If no, why not? An explanation of this term will be agreed).
- Is there a limitation of the number of learning outcomes a BA or MA programme can include in your country? Taking this into account, how many learning outcomes would you include in a BA or and MA programme in relation to accessibility and universal design?
- Do you have any suggestions for the students' assessment?
- We want to produce a document with recommendations on how to integrate accessibility and universal design in higher education curricula. Which kind of recommendations would you include: broad recommendations (related to respect for human rights and diversity, for instance), more targeted recommendations (explaining, for instance, the principles of universal design, accessibility in the Convention on the Rights of Persons with Disabilities, etc.) or both? Do you have any suggestions for this document?

Specific task

- Can you come up with (the number they have agreed, between 1 and 3 most probably) suggested learning outcome(s) for a BA? And also for an MA programme? (a suggestion here is to give some instructions on how to write learning outcomes)

Suggested guiding questions: Focus groups on specific skills

Introductory questions

- Can you introduce yourself, focusing on your expertise in teaching and in coordinating higher education programmes?

Curriculum

- What does accessibility and universal design mean in your specific area of knowledge?
- How would you recommend including accessibility and universal design in the BA or MA programmes in your specific area of knowledge? If you have any experiences, please share them. Please notice that all questions will be related to your specific area of knowledge, not to shared aspects across higher education programmes.
- Which knowledge, skills and competences about accessibility and universal design would you include, if any? (Try to focus on knowledge, skills and competences, all aspects by asking follow-up questions. If none, try to understand why.
- Which learning outcomes about accessibility and universal design would you include, if any? (Note to moderator: If yes, which ones? If no, why not?)
- How many learning outcomes would you include in a BA or and MA programme in your area of knowledge in relation to accessibility and universal design?
- Do you have any suggestions for the students' assessment?
- We want to produce a document with recommendations on how to integrate accessibility and universal design in higher education curricula. Which kind of recommendations would you include: broad recommendations (related to respect for human rights and diversity, for instance), more targeted recommendations (explaining, for instance, the principles of universal design, accessibility in the Convention on the Rights of Persons with Disabilities, etc.) or both? Do you have any suggestions for this document?

Specific task

- Can you come up with (the number they have agreed, between 1 and 3 most probably) suggested learning outcome(s) for a BA? And also for an MA programme? (a suggestion here is to give some instructions on how to write learning outcomes).

Focus group conclusion (15 minutes)

The moderator wraps up discussion and, after a very short break (maximum 5 minutes), the note-taker reads the main conclusions of the session (maximum of one page would be expected). Participants make final edits and reach an agreement about these approved conclusions.

After the focus group

Focus group leader fills in the focus group report template provided by UAB (Annex 3).

2.2. Template to carry out the focus groups

1. General information

- Goal: *what is the goal of the focus group.*
- Focus group type (shared/specific). If specific, area of knowledge.
- Participant pool: *who will participate, and how many people should be included in each focus group.*
- Recruitment process: *how will participants be contacted.*
- Timeline: *when the focus group will take place, and when the materials should be ready.*
- Place: *where the focus group will take place (e.g. physical space, online)*
- Language and accessibility: *what language(s) the test will take place in, and whether translation and accessibility support need to be included.*
- Materials: *what physical/digital materials should be ready.*
- Preparatory work: *whether and what prep materials should be done by participants.*

2. Protocol: guiding questions

(This will be shared across focus groups.)

2.3. Template to report the focus groups

1. General information

- Goal:
- Focus group type (shared/specific). If specific, area of knowledge.
- Place and time:
- Partner responsible:

2. Participant profile

(Summarise the participant profile of the participants)

3. Approved conclusions

(Include the main conclusions from the focus group, which have been agreed by participants)

4. Researcher observations

(Provide any relevant information about the development of the focus group and its results)

Annex 3. Co-Design Sessions Supporting Documents

3.1. Template for the co-design sessions

Information about the co-design sessions

Number of sessions:

Dates:

Format:

Participant profile (short description of each participant):

BA/MA:

University and country:

Course title:

Researcher's observations

(Include any comments you may have on the development of the co-design sessions)

Course syllabus

BA or MA: title of the BA or MA

Course title: title of the course

ECTS: number of ECTS, remember that 1 ECTS = 25-30 hours of students work, not necessarily in class. (Indicate the equivalence of ECTS-number of hours)

Type: compulsory/optative

Timeline: course and semester

Modality: in-person/online/hybrid

Pre-requisites: any requirements for students attending this course, in terms of previous knowledge. For instance, having taken another course before. There may not be any pre-requisites.

Learning objectives: course objectives written from the perspective of the instructor. They describe what the instructor aims to achieve in the course.

Content: describe the content of what will be taught in bullet points.

Learning outcomes: what the student is expected to attain by the end of the programme in terms of knowledge, skills and competences. A learning outcome is specific, relevant, attainable in a certain period of time and can be assessed. A learning outcome could be phrased as follows “At the end of the BA/course/MA, the student will be able to...” + specific verb.

- Knowledge refers to what a graduate knows and understands.
- Skills refers to what a graduate can do.
- Competences refer to the application of skills and knowledge in the specific context in which the graduate applies their knowledge and skills.

Table 10. Suggested verbs for learning outcomes (just a selection)

Knowledge	cite, compare, convert, defend, define, demonstrate, describe, discuss, distinguish, estimate, explain, identify, illustrate, indicate, infer, inform, interpret, list, match, name, organise, outline, perform, provide, recall, recognise, recount, relate, rephrase, revise, select, sociate, suggest, summarise, translate, write.
Skills	analyse, apply, calculate, categorise, change, classify, compare, conduct, conclude, construct, contrast, critique, defend, demonstrate, determine, develop, differentiate, discriminate, discuss, distinguish, dramatise, draw, employ, estimate, evaluate, examine, experiment, identify, illustrate, interpret, judge, justify, measure, modify, operate, organise, practise, predict, prepare, prioritise, probe, produce, programme, question, relate, research, resolve, restructure, score, select, solve, structure, summarise, test, translate, use, validate.
Competences	adapt, assemble, combine, compare, compile, compose, construct, create, design, devise, divide, explain, formulate, generate, integrate, plan, propose, relate, reorder, restructure, revise, synthesise, systematise, unify.

Methodology: brief description of the learning/teaching methodology.

Evaluation: describe how students will be assessed and assign percentages.

References: provide a suggested reading list for the course.

3.2. Sample courses

Audiovisual translation and accessibility (UAB)

Course syllabus

BA or MA: BA in Translation and Interpreting³

Course title: Audiovisual translation and accessibility⁴

There will be different groups depending on the language combination (English into Catalan, English into Spanish, French into Catalan and French into Spanish).

ECTS: 6 ECTS (1 ECTS = 25 hours). This implies 45 class hours.

Type: compulsory

Timeline: 3rd year, 1st semester (in a 4-year BA degree)

Modality: In-person

Pre-requisites: no specific pre-requisites related to audiovisual translation and accessibility. However, students are required to have knowledge about general translation acquired in the two first years of the BA.

Learning objectives:

- The course will provide:
 - an overview of audiovisual and multimodal texts in terms of components, genres, media, environments and audiences,
 - an understanding of user needs and accessibility and universal design solutions, including easy-to-understand language, and
 - a mapping of audiovisual transfer modes, and related professional aspects.
- The course will give students hands-on practice on different audiovisual transfer modes and accessibility services, such as voice-over, dubbing, subtitling, and audio description. It will also delve into the challenges of video games localisation and accessibility.

Content:

- The audiovisual and multimodal text: characteristics and genres. Suggested number of 90-minute sessions: 2.⁵
- Accessibility and universal design in different environments: user profiles and user needs. Suggested number of 90-minute sessions: 2.

³ The BA title is still being discussed. We have used the current BA denomination.

⁴ This course could be included as an elective course for BA in Journalism, Communication, etc.

⁵ Each class currently lasts 90 minutes. However, this can be adapted depending on the final length of the classes, which depends on the final course Schedule.

- Audiovisual transfer modes: an overview. Suggested number of 90-minute sessions: 1.
- Voice-over: workflows, tools, guidelines and practice. Suggested number of 90-minute sessions: 3.
- Dubbing: workflows, tools, guidelines and practice. Suggested number of 90-minute sessions: 3.
- Subtitling: workflows, tools, guidelines and practice. Suggested number of 90-minute sessions: 3.
- Video games localisation: workflows, tools and practice. Suggested number of 90-minute sessions: 3.
- Access services: an overview. 1.
- Subtitling for the deaf and hard-of-hearing: workflows, tools, guidelines and practice. Suggested number of 90-minute sessions: 3.
- Audio description: workflows, tools and practice. Suggested number of 90-minute sessions: 3.
- Video games accessibility: workflows, tools and practice. Suggested number of 90-minute sessions: 1.
- Easy-to-understand language. Suggested number of 90-minute sessions: 1.
- Professional aspects and group project presentations. Suggested number of 90-minute sessions: 4.

Learning outcomes:

At the end of the course, the student will be able to:

- LO1 (Knowledge): Identify the characteristics of audiovisual and multimodal texts and the audiovisual transfer modes and access services that can be used to make these texts accessible to diverse audiences in different media, environments and formats.
- LO2 (Skills): Solve translation and accessibility related challenges in audiovisual and multimedia texts.
- LO3 (Competences): Create accessible audiovisual and multimodal texts applying guidelines, using the relevant tools and fulfilling professional standards.

Methodology:

The course will combine lectures and hand-on sessions, with an emphasis on student-centred methodologies. Possible activities are:

- Problem-solving activities.
- Individual translation tasks.
- Collaborative projects.
- Class presentations (individuals/groups).
- Class discussion and debates.
- Invited talks or interactive sessions with users, where possible.

Evaluation:

- Theoretical test (30%)
- Practical exam (40%)
- Group project: (30%). Students will work in groups on a specific project in which they will translate or make and audiovisual content accessible. Students will be encouraged to develop projects with end users.

References:

1. ADLAB PRO course materials: <https://www.adlabpro.eu/coursematerials/>
2. Bogucki, Lukasz; Deckert, Mikolaj (eds) (2020) *The Palgrave Handbook of Audiovisual Translation and Media Accessibility*. Palgrave Macmillan.
3. Chaume, Frederic (2012) *Audiovisual translation: dubbing*. St. Jerome.
4. Díaz-Cintas, Jorge; Remael, Aline (2021) *Subtitling*. Routledge.
5. EASIT platform: <https://transmediacatalonia.uab.cat/easit/>
6. Franco, Eliana; Matamala, Anna; Orero, Pilar (2010) *Voice-over translation: an overview*. Peter Lang.
7. Lindholm, Camilla; Vanhatalo, Ulla (eds.) (2021) *Handbook of Easy Languages in Europe*. Frank & Timme.
8. O'Hagan, Minako; Mangiron, Carme (2013) *Game Localization: Translating for the Global Digital Entertainment Industry*. Benjamins.
9. Pérez-González, Luis (eds) (2018) *The Routledge Handbook of Audiovisual Translation*. Routledge.
10. Taylor, Christopher; Perego, Elisa (eds) (2022) *The Routledge Handbook of Audio Description*. Routledge.
11. Zárate, Soledad (2021) *Captioning and Subtitling for d/Deaf and Hard of Hearing Audiences*. UCL. <https://discovery.ucl.ac.uk/id/eprint/10117831/1/Captioning-and-Subtitling-for-Deaf-and-Hard-of-Hearing-Audiences.pdf>

Technology and Accessibility in Inclusive Education (EUC)

Course syllabus

BA or MA: MA Education Sciences: Special and Inclusive Education

Course title: Technology and Accessibility in Inclusive Education

Language: Greek and English (the programme is accredited in both languages although it has been offered only in Greek thus far)

ECTS: 10 ECTS (1 ECTS = 25 hours).

Type: elective

Timeline: 2nd year, 3rd semester (in a 2-year MA degree)

Modality: Distance Learning/Online (up to six teleconferences)

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Prerequisites: There are no specific prerequisites related to Technology and Accessibility in Inclusive Education. However, students are expected to have completed during the first year of their studies (1st and 2nd semester), the introductory compulsory courses in Sociocultural Issues of Education and Disability Studies in School and Society, in order to have some background in basic principles of inclusive education and disability.

Learning objectives:

The course will provide:

- an overview of the assistive technology and accessibility ecosystem and background information and history in relation to the human rights perspective of accessible inclusive education
- a mapping of the assistive technology products and services and their connection to accessibility and universal design
- an understanding of learners' needs in terms of assistive technology, accessibility and universal design for learning, including digital accessibility, physical learning environment accessibility, easy-to-read and differentiation of learning, and
- a framework for learning design in developing learning outcomes, methodologies, activities and evaluation that adhere to accessibility and include effective use of assistive technology.

The course will give students an opportunity for hands-on practice on different accessibility solutions and services to the extent that this is possible in a distance and online learning mode. It will also delve into the challenges of digital solutions localisation, ethical considerations and other issues.

Content:

- Technology, disability and accessibility ecosystem: basic concepts, terminology, constructions, global and national policies. Suggested number of weeks: 1.
- Digital divide, digital inclusion and digital literacy: barriers, opportunities and the role of technology. Suggested number of weeks: 1
- Accessibility and (assistive) technology for physical access in physical and digital environments: user needs and possible applications. Accessibility and universal design in different environments: user profiles and user needs. Suggested number of weeks: 1
- Accessibility, technology and communication: AAC and beyond. Suggested number of weeks: 1
- Accessible learning content: accessible learning applications and educational games, the use of symbols and easy to read guidelines and practice. Suggested number of weeks: 2
- Digital accessibility, accessible web and AT: Basic concepts, guidelines and examples. Suggested number of weeks: 1

- Accessible Documents and Media in Education: guidelines and practice. Suggested number of weeks: 2 (including students' project presentations)
- Universal Design and Universal Design for Learning: Integrating accessibility and AT in the learning curriculum: Suggested number of weeks: 2 (including students' project presentations)
- Instructional co-design: involving learners for accessible learning design and development. Suggested number of weeks: 1
- Educational decision making and whole school approach for accessibility in inclusive education: Suggested number of weeks: 1

Learning outcomes:

At the end of the course, the students will be able to:

- LO1 (Knowledge): Identify and critically analyse the aspects of the accessibility and assistive technology ecosystem including definitions, approaches and policies at a global perspective in relation to disability and human rights and their impact on national policies.
- LO2 (Knowledge): Identify the framework and principles of universal design (and udl) in relation to accessibility and the use of assistive technology.
- LO3 (Skills): Configure accessibility requirements and assistive technology features and applications to solve access and accessibility related challenges in the learning process and curricula.
- LO4 (Skills): Creatively use technology for the effective education of all learners including learners with disabilities.
- LO5 (Competences): Critically assess accessibility in education across all aspects, and create solutions to remove barriers (physical, digital, societal, attitudinal) to learning and participation in the learning process and environment.
- LO6 (Competences): Design and develop accessible and inclusive learning experiences by applying guidelines and principles of accessibility and universal design for learning with the use of (assistive) technology.

Methodology:

The course will consist of online interactive material, synchronous lectures and discussions (teleconferences) and hands-on self-paced activities, with an emphasis on student-centred and interactive online learning methodologies. Possible activities are:

- Interactive learning content
- Problem-solving (case study based) activities
- Collaborative projects
- Online presentations (individuals/groups)
- Reflection and online interactive activities such as discussion forums, journals and blogs

- Invited talks or interactive webinars with users and education professionals, where possible

Evaluation:

- Ongoing interactive activities (10%)
- Individual practical project (10%): Students will work individually in developing an accessible piece of learning material in any format and application they will choose from the course content (e.g. accessible video, document, small webpage etc).
- Group project: (30%). Students will work in groups on a specific project in which they will analyse the accessibility and assistive technology needs of at least 2 different learner profiles and design and develop a learning unit (of a subject of their choice) where they will implement accessibility requirements in the learning process, activities and environment. Students will be encouraged to develop projects with end users, if they have access to educational institutions.
- Final exam (50%)

References:

1. Cook, A., Polgar, J. & Encarnação, P. (latest edition). Assistive Technologies: Principles and Practices. Mosby-Elsevier.
2. Hoogerwerf, E.J., Mavrou, K. and Traina, I. (Eds.) (2019). The role of assistive technology in fostering inclusive education. Strategies and tools to support change. London: Routledge.
3. Lazar, J. & Stein, M.A. (2017). Disability, Human Rights & Information Technology. Pennsylvania: University of Pennsylvania Press.
4. Mavrou, K. (2023). The use of Assistive Technology in Education: A Guide for Teachers. UNICEF Regional Office for Europe and Central Asia, Geneva. (A UNICEF Resource and Publication) Available at: <https://tinyurl.com/unicef2023guideatedu>
5. Rose, D., and A. Meyer. A., Rose, D. & Gordon, D. (latest edition). Universal Design for Learning: Theory and Practice. MA: Cast (e-book).
6. Ravneberg, B. & Soderstrom, S. (2018). Disability, Society and Assistive Technology. London: Routledge.
7. Seale, J. and Nind, M. (Eds). (2010) Understanding and Promoting Access for People with Learning Difficulties: Seeing the Opportunities and Challenges of Risk. Abingdon, GB: Routledge.
8. Tatnall, A. (Ed.) (2020). Encyclopedia of Education and Information Technologies. Springer International Publishing.

Training sessions for Educational Leaders (EDF)

Training Syllabus

BA or MA: For all academic staff, coordinators and lecturers from the following disciplinary areas:

- Science, Technology, Engineering,
- Marketing and Communications
- Management and Business Administration
- Research and data analytics
- Public Health
- Arts and Humanities
- Health Sciences

Training title: “Disability inclusion and accessibility”

Hours: 10 hours

Type: Training sessions

Timeline: During the academic year. 1 training session per month

Modality: In-person

Pre-requisites: No basic knowledge of disability inclusion and accessibility needed.

Learning objectives:

The training will provide:

- An introduction to disability, different theoretical models and the importance of the United Nations Convention on the Rights of Persons with Disabilities (CRPD).
- An overview of the barriers that people with disabilities face and the types of assistive technologies that can remove barriers and create efficiencies.
- Understanding of basic concepts of design for all and accessibility including digital, environmental and accessible communication.

Content:

1 Session: Introduction to disability inclusion – 2 hour

- Introduction to disability and inclusion from a perspective of persons with disabilities. Overview of the barriers that people with disabilities experience every day. Different models of Disability, type of disabilities, UNCRPD.

2 Session: Introduction to Accessibility and Design for all principles – 2 hour

- Introduction to Accessibility. Why it is important. Design for all principle Assistive technologies. Examples of assistive technologies. Experiences from people with disabilities.

3 Session: Digital Accessibility – 2 hours

- Introduction to Digital Accessibility. How to design, create, and evaluate accessible documents and presentations. Practical demonstration from person with disabilities.

4 Session: Accessible environment – 2 hours

- Best practices for addressing common environmental barriers and meeting the diverse physical access needs of individuals, including:
 - Wheelchair users,
 - People who are Blind or Low Vision
 - People who are Deaf or hard of hearing
 - Neurodivergent people,
 - People with intellectual and cognitive disabilities

5 Session: Accessible Communication – 2 hours

- Basic knowledge on how to communicate appropriately with people with different disabilities and appropriate use of language and facts around different disabilities.

Learning outcomes:

At the end of the course, the educational leaders will be able to:

- LO1 (Knowledge): Identify the barriers of persons with disabilities face every day and demonstrate a basic understanding of the fundamental concepts of disability, UNCRPD principles, accessibility, design for all principles and understand of the of the existing assistive technologies.
- LO2 (Skills): Recognise the diversity of users with disabilities.
- LO3 (Skills): Foster students with disabilities engagement and engage colleagues in fostering collaboration, learning, and sharing of accessibility knowledge.
- LO4 (Competences): Create accessible materials such as documents and presentations.

Methodology:

The training for educational leaders will be theoretical and practical. Persons with disabilities who are the experts by their lived experiences will be invited to talk as well as OPDs representatives. The trainers involved will be accessibility experts who will be use interactive presentations. The trainings sessions will be held in-person.

Evaluation: short questionnaire.

References:

1. CBM Christian Blind Mission, Four Models of Disability, 2022
<https://participation.cbm.org/assets/Four-models-of-disabilities.pdf>

2. Convention on the Rights of Persons with Disabilities (CRPD), General Assembly Resolution A/RES/61/106, adopted 12 December 2006, entered into force 3 May 2008.
3. European Disability Forum, European Human Rights report, ISSUE 1, 2016
https://mcusercontent.com/865a5bbea1086c57a41cc876d/files/6d8bcc33-8054-7819-7bd3-51647f2bc17b/Human_Righst_Report_2010.pdf
4. European Accessibility Forum, Guide for Accessible Meetings for All, 2019
5. EPRS | European Parliamentary Research Service Scientific Foresight Unit (STOA), Assistive technologies for people with disabilities, 2018
[https://www.europarl.europa.eu/RegData/etudes/IDAN/2018/603218/EPRS_IDA\(2018\)603218_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/IDAN/2018/603218/EPRS_IDA(2018)603218_EN.pdf)
6. Roberta Lulli European Disability Forum, Accessible Word Toolkit - Digital Accessibility Training session #1, 2021
7. Roberta Lulli, European Disability Forum Accessible PowerPoint Toolkit - Digital Accessibility Training session #2

Digital Accessibility (JKU)

Course Syllabus

BA or MA: BA Computer Science and BA Artificial Intelligence

Course title: Digital Accessibility (Combined Course)

ECTS: 3 (1 ECTS = 25-30 hours)

Type: elective

Timeline: 2nd or 3rd year of study

Modality: In-person

Pre-requisites: Basic knowledge of programming (especially web development: HTML, CSS, JS)

Learning objectives: This course provides:

- Understanding of the target groups and how they use computers.
- Overview of assistive technology (AT) and how it is used in combination with accessibility features in the context of web, mobile and desktop applications.
- Understanding of basic concepts of accessibility.
- Overview and understanding of the most important accessibility guidelines for the web, documents, apps and software.
- Understanding of evaluation methods and hands-on training to identify accessibility issues in web content, documents, apps and software.
- Hands-on experience and training in how to implement accessibility for web, documents, apps and software.

Content:

Introduction to Accessibility:

- Suggested number of 90-minute session: 1.
- Accessibility basics, its importance for equal access and inclusion as well as restrictions for different target groups.

Assistive Technologies:

- Suggested number of 90-minute session: 2.
- Introduction to different target groups, such as people with visual, auditory, cognitive, or motor impairments, and the specific assistive technologies they use. Includes hands-on testing of tools like screen readers, magnifier, and voice recognition software.

Web Accessibility:

- Suggested number of 90-minute session: 6.
- Focussing on the WCAG guidelines and their practical application, practical tips mentioning other guidelines like ATAG, UAAG, EN301 549.
- Key Topics are 1) alternative descriptions of non-text content, 2) video and audio alternatives, 3) keyboard, 4) structure, 5) dynamic content/predictable, 6) custom controls/ name, role, value (WCAG criterion 4.1.2).

Document Accessibility:

- Suggested number of 90-minute session: 2.
- Creating accessible Word and PDF documents and their relevance in practice, practical tips.
- Short introduction to InDesign, LaTeX and LibreOffice

Software Accessibility:

- Suggested number of 90-minute session: 2.
- Theoretical basics, differences to web accessibility, evaluation methods for software and dealing with screen readers and Graphical User Interfaces, OS basics for screen readers, practical tips.
- For mobile apps: Evaluation and identification of problems (examples, testing).
- For desktop software: Comparison of accessibility features/capabilities of most common frameworks and in-class development of an accessible GUI using a GUI-framework of choice.

Practice-oriented exercise

- Suggested number of 90-minute session: 3.
- Development of a small web interface or website with specific required elements. Implementation of the same requirements by two groups, including mutual checking for accessibility compliance. Tasks involve error identification, solution implementation, and verification of accessibility features.

Learning outcomes:

At the end of the course, the student will be able to:

- LO1 (Knowledge): Explain the principles and techniques of web, documents, software and app accessibility.
- LO2 (Knowledge): Describe how people with disabilities utilize technology, recognizing various assistive tools and adaptive strategies that enable access to digital content, communication, and daily activities.
- LO3 (Knowledge): Identify different types of Assistive Technologies and explain basic functions and areas of use.
- LO4 (Skills): Analyse accessibility issues in the areas of web, document, software and app accessibility.
- LO5 (Competences): Independently develop and implement solutions to improve accessibility in web applications, documents and software.

Methodology:

The course uses a combined teaching method with an emphasis on practical exercises:

At Home – prior to lessons:

- Videos: Preparatory knowledge transfer videos to be watched before the course unit at home.

In Class – 90min lesson:

- Short Quiz after Video Preparation and Discussions: Theoretical knowledge check and building on the videos to deepen understanding and clarify open questions during the unit.
- Smaller exercises/projects: Practical application of what has been learnt through group work during the unit, solving real life accessibility problems.

In Class – block session:

- Larger practice-oriented exercise: Project-based work of a competitive nature designed to deepen knowledge and practical skills.

Evaluation:

- Continuous assessment: Presentation of results of group work and summary of videos (50%).
- Larger group project: Evaluation of the group work based on the quality of the results, with final discussion (50%).

References:

1. Adobe. (n.d.). **Accessibility at Adobe.** <http://www.adobe.com/accessibility>
2. Adobe. (n.d.). **Adobe InDesign accessibility.** <https://www.adobe.com/accessibility/products/indesign.edu.html>
3. Adobe. (n.d.). **Adobe PDF accessibility overview.** <https://www.adobe.com/accessibility/pdf/pdf-accessibility-overview.html>

4. Android Developers. (n.d.). **Android accessibility guide.** <https://developer.android.com/guide/topics/ui/accessibility/apps>
5. Android Developers. (n.d.). **Android accessibility testing.** <https://developer.android.com/guide/topics/ui/accessibility/testing>
6. Apple. (n.d.). **Apple accessibility.** <http://www.apple.com/accessibility>
7. Apple Developers. (n.d.). **Accessibility for developers.** <https://developer.apple.com/accessibility/ios/>
8. Apple Developers. (n.d.). **Accessibility programming guide for iOS.** <https://developer.apple.com/design/human-interface-guidelines/accessibility>
9. Apple Developers. (n.d.). **Verifying app accessibility on iOS.** <https://developer.apple.com/documentation/accessibility/accessibility-inspector>
10. European Telecommunications Standards Institute. (2022). **EN 301 549: Accessibility requirements for ICT products and services, version 3.2.1.** https://www.etsi.org/deliver/etsi_en/301500_301599/301549/03.02.01_60/en_301549v030201p.pdf
11. GNOME. (n.d.). **Linux accessibility guidelines.** <https://developer.gnome.org/documentation/guidelines/accessibility.html>
12. IBM. (n.d.). **IBM accessibility.** <http://www-03.ibm.com/able/>
13. IBM. (n.d.). **IBM accessibility guidelines.** <http://www-03.ibm.com/able/guidelines/>
14. Microsoft. (n.d.). **Accessibility best practices for UI automation.** <https://docs.microsoft.com/en-us/dotnet/framework/ui-automation/accessibility-best-practices>
15. Microsoft. (n.d.). **Make your Word documents accessible to people with disabilities.** <https://support.microsoft.com/en-us/office/make-your-word-documents-accessible-to-people-with-disabilities-d9bf3683-87ac-47ea-b91a-78dcacb3c66d>
16. Microsoft. (n.d.). **Microsoft accessibility.** <https://www.microsoft.com/en-us/accessibility/>
17. Michigan State University. (n.d.). **LaTeX accessibility.** <https://libguides.lib.msu.edu/c.php?g=995742&p=8207771>
18. Oracle. (n.d.). **Java accessibility overview.** <https://docs.oracle.com/en/java/javase/20/access/java-accessibility-overview.html>
19. Oracle. (n.d.). **Oracle accessibility.** <http://www.oracle.com/us/corporate/accessibility/index.html>
20. Qt. (n.d.). **Accessibility in Qt 6.** <https://doc.qt.io/qt-6/accessible.html>
21. W3Schools. (n.d.). **W3Schools.** <https://www.w3schools.com/>
22. World Wide Web Consortium. (n.d.). **Quick reference to WCAG 2.2.** <https://www.w3.org/WAI/WCAG22/quickref>
23. World Wide Web Consortium. (n.d.). **Techniques for WCAG 2.0.** <https://www.w3.org/TR/WCAG20-TECHS/>
24. World Wide Web Consortium. (n.d.). **WAI-ARIA authoring practices.** <https://www.w3.org/WAI/ARIA/apg/>

Digital Accessibility (MU)

Course syllabus

BA or MA: BA, Information Services Design

Course title: Digital Accessibility

Language: Czech

ECTS: 3 ECTS (1 ECTS = 25 hours).

Type: elective

Timeline: 2nd year, 3rd semester (in a 3-year BA degree)

Modality: Distance Learning/Online (up to six teleconferences)

Prerequisites: There are no specific prerequisites related to this course.

Learning objectives:

The Digital Accessibility course aims to equip students with the knowledge and skills to create digital solutions accessible to the broadest possible group of users, including users with specific needs. Students will learn to identify and solve the most common barriers in the digital environment, learn the principles of inclusive design and become familiar with the legislative requirements for accessibility. The course offers not only an introduction to the needs of different user groups but also to assistive technologies that ensure full access to digital content. Through practical demonstrations, project work or gaining competences in accessibility testing, students can apply the acquired knowledge in real projects and thus contribute to creating a barrier-free digital space.

Content:

- Introduction to the topic

This module sets the stage by defining digital accessibility and explaining its importance in today's digital world. It highlights the growing demand for accessible digital products and services, driven by legal requirements, ethical considerations, and the increasing diversity of users. Students will gain an understanding of the scope and impact of accessibility on user experience, businesses, and society at large.

- The most common barriers in the digital environment

Students will explore common barriers that users with disabilities face when navigating websites, applications, and other digital platforms. Topics will include poorly structured content, non-responsive design, lack of keyboard accessibility, and

inadequate use of alternative text for images. This section will also cover how these barriers negatively affect user experience and engagement.

- Users with specific needs

This section focuses on the diverse range of users who benefit from accessible digital design, including individuals with visual, auditory, motor, and cognitive impairments. Students will learn about specific needs these users may have, such as screen reader compatibility, simplified navigation, captioning for videos, or adaptable interfaces. By understanding these varied requirements, students will be better equipped to design inclusive solutions.

- Assistive technologies

A deep dive into the tools and technologies that users with disabilities rely on, such as screen readers, magnification tools, speech recognition software, and braille displays. This module will also cover how digital content can be made compatible with these technologies, ensuring an inclusive user experience across different devices and platforms.

- The three pillars of accessibility (code, design, content)

This foundational concept explores how accessibility can be built into digital experiences from three critical perspectives: code (ensuring the underlying technical structure supports accessibility), design (creating visual and interactive elements that are usable for all), and content (presenting information in a clear and accessible way). Each pillar is essential for developing a fully accessible product.

- Content structuring

In this section, students will learn the principles of organizing content in a logical and accessible manner. This includes the correct use of headings, lists, tables, and other elements that improve navigability and comprehension for all users, particularly those using screen readers. Proper structuring helps ensure that content is easy to follow and understand for a wide audience.

- Interface interaction - Keyboard accessibility and operability, voice control

This module focuses on ensuring that users can interact with digital interfaces using alternative input methods, such as keyboards or voice control. Students will learn best practices for making websites and applications fully operable without a mouse, including implementing keyboard shortcuts and ensuring that all interactive elements are accessible via tab navigation or voice commands.

- Readability and contrast

Here, students will explore the importance of text readability, focusing on font size, type, and spacing, as well as the use of sufficient contrast between text and

background colours. These elements are vital for users with visual impairments, as well as those with reading or cognitive challenges. This section will also cover tools and techniques to test and enhance readability and contrast in digital designs.

- Accessibility of graphics and multimedia

This module covers how to make visual and multimedia content accessible to all users. Topics include providing alternative text for images, using captions and transcripts for video and audio content, and ensuring that graphics and animations do not interfere with accessibility. Students will also learn about specific guidelines for creating accessible multimedia experiences.

- Document accessibility

Students will learn best practices for creating accessible documents in various formats, such as PDFs, Word documents, and presentations. This section will focus on ensuring that documents are properly tagged, structured, and compatible with screen readers. Students will also explore tools that can be used to assess and improve document accessibility.

- Easy-to-read language

This section addresses how language and phrasing can impact accessibility, particularly for non-native speakers or users with cognitive impairments. Students will learn techniques for writing clear, concise, and simple text, avoiding jargon or overly complex language. They will also explore the importance of localization and translation in making digital content accessible across different linguistic groups.

- Accessibility testing - Theory, automatic vs. manual testing, tools

Students will gain an understanding of the two main approaches to accessibility testing: automated tools and manual testing. This module will introduce different tools available for automated testing and explain how they can help identify potential issues. However, it will also emphasize the importance of manual testing, particularly for nuanced aspects of accessibility like readability and user interaction.

- Accessibility testing in practice

This practical module gives students hands-on experience with accessibility testing. They will use a variety of tools to evaluate digital products and apply both automated and manual testing techniques. Real-world case studies and group projects will help students learn how to identify, document, and resolve accessibility issues.

- Legislation and standards

This section introduces students to the legal frameworks and standards surrounding digital accessibility. They will study international guidelines like the Web Content Accessibility Guidelines (WCAG), as well as regional legislation such as the Web

Accessibility Directive or the European Accessibility Act. Understanding these regulations is crucial for ensuring compliance and avoiding legal risks.

- Accessibility overlays

This module discusses the use of accessibility overlays—software add-ons that claim to fix accessibility issues without modifying the underlying code. Students will explore the controversy surrounding these solutions, analysing their effectiveness, drawbacks, and ethical implications.

- Further (self-)education and certifications

The final section encourages students to continue learning beyond the course, offering guidance on self-education resources, certification programs (such as Certified Professional in Web Accessibility), and industry organizations that provide ongoing support and development in the field of digital accessibility.

Learning outcomes:

Upon successful completion of the course, students will be able to:

- LO1 (Knowledge): Identify the most common barriers in the digital environment, recognising how they hinder the full use of digital technologies and affect users with specific needs.
- LO2 (Knowledge): Characterize users with specific needs and design appropriate digital solutions.
- LO3 (Knowledge): Explain legislative requirements for accessibility, ensuring that designs comply with relevant standards and regulations.
- LO4 (Skills): Implement assistive technologies in digital design, considering their strengths and limitations.
- LO5 (Skills): Apply inclusive design principles to create digital content that is accessible to a wide range of users.
- LO5 (Competence): Implement the three pillars of accessibility (code, design, and content) into websites, apps, documents, and multimedia content.
- LO6 (Competence): Perform accessibility testing on digital solutions: identifying issues and recommending modifications to improve accessibility.

Methodology:

The course will include online interactive materials for self-paced study, live lectures and discussions (via teleconferences), and practical, self-paced activities, all with a focus on student-centered and interactive online learning methods. Potential activities include:

- Interactive learning modules
- Problem-solving tasks based on case studies
- Online presentations (individuals/groups)
- Reflective and interactive online activities such as discussion forums, journals, and blogs

- Guest lectures or interactive webinars with users and education professionals, where feasible.

The last part of the course will include an individual project focused on accessibility-related tasks, such as adding captions to a video, testing the accessibility of a website, or conducting an interview with a person with a disability. These projects will give students practical experience and a deeper understanding of real-world accessibility challenges.

Evaluation:

- Ongoing interactive activities (30%)
- Individual practical project (70%)

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