



ATiENA

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

Work Package 2

**Recommendations on the integration of accessibility
and universal design in higher education curricula,
including sample modules.**



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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 provides a brief introduction with definitions of accessibility and universal design.

Section 2 corresponds to Task 2.1. and offers recommendations on implementing accessibility and universal design in HE curricula. These are addressed to a wide range of stakeholders including policymakers, quality agencies and accreditation bodies, educational leaders, programme creators, instructors, and user representatives. The recommendations deal with key aspects such as: legal framework, financial support, curriculum design, staff training, and learning outcomes. The focus group reports used to create these recommendations are available in Deliverable 2.1. "Focus Groups and Co-Design Sessions Reports."

Section 3 corresponds to Task 2.2. and offers five sample courses across various fields and levels: a course on "Audiovisual Translation and Accessibility" and two courses on "Digital Accessibility" at BA level; a course on "Technology and Inclusive Education" at MA level; and a course addressed to lecturers and educational leaders on "Training of Trainers (ToEduL) – Disability, Inclusion and Accessibility". Details from the co-design sessions are also available in Deliverable 2.1. "Focus Groups and Co-Design Sessions Reports."

Abbreviations

AB	Advisory Board
BA	Bachelor
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”
ECTS	European Credit Transfer System
EDF	European Disability Forum
ESG	Environmental, Social and Governance
EUC	European University of Cyprus
HE	Higher Education
ICT	Information and Communication Technology
JKU	Johannes Kepler Universität
MA	Master
MU	Masaryk University
OPD	Organisations of People with Disabilities
UAB	Universitat Autònoma de Barcelona
UDL	Universal Design for Learning
WP	Work Package

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1. Introduction

This document has been produced as part of the ATHENA project funded by European Education and Culture Executive Agency – EACEA Erasmus+, EU Solidarity Corps A.2 – Skills and Innovation, which focuses on integrating accessibility and universal design in higher education (HE) curricula across diverse disciplines.

The project is divided into two phases: the first involves assessing the current integration of accessibility and universal design in HE programmes across the participating countries. For more details on this phase, please refer to the ATHENA project's WP1 transnational report, available online (<https://athenaproject.eu/wp1-transnation-report>). The second phase involves refining these insights through expert consultations in focus groups and co-design sessions (see Deliverable 2.1. "Focus groups report and co-design sessions" available on ATHENA's project website for more details). It also involves developing a set of recommendations on integrating accessibility and universal design into HE curricula, alongside sample courses from different fields of study.

This document includes recommendations (see Section 2) and five sample courses (see Section 3). It is directed at various stakeholders including policymakers, quality agencies and accreditation bodies, educational leaders, programme creators, instructors, and user representatives. Both sections incorporate input from 6 experts which are part of Athena Advisory Board (AB). The Advisory Board is composed of 6 people: one student representative of persons with disabilities, one accessibility expert, one lecturer with disabilities/accessibility experts, one quality assurance expert, two lecturers experienced in developing MA and BA curricula integrating accessibility and universal design principles.

The project defines 'universal design' as the creation of products and environments that can be used by all to the greatest extent possible, without requiring specialised adaptations [CON97; UNCRPD]. 'Accessibility' is understood as the removal of barriers to ensure equal access for individuals with disabilities to environments, goods, and services [BRO20; UN07].

2. Recommendations

This section provides recommendations to integrate accessibility and universal design into HE curricula. Different sets of recommendations have been developed targeting different stakeholders: policymakers, quality agencies, educational leaders, programme creators, instructors, and user representatives. These recommendations aim to ensure that accessibility and universal design become an integral part of HE. The proposals address legal frameworks, financial support, curriculum design, staff training, and student learning outcomes, promoting inclusivity across various fields of knowledge. Specific strategies for programme creators and instructors are provided, alongside suggested learning outcomes tailored to diverse academic disciplines.

2.1. Promoting the integration of accessibility and universal design in higher education curricula

To policymakers and governments

- Include accessibility and universal design training as legal requirements for any HE curricula.
- Include accessibility and universal design in the Guideline to Environmental, Social and Governance (ESG) standard 1.2 (Design and approval of programmes).
- Provide financial resources to include accessibility and universal design in HE curricula and to implement such curricula.
- Create national accessibility advisory committees for higher education that include representatives from universities, industry, organizations of people with disabilities, and accessibility experts. These committees should provide ongoing guidance on integrating accessibility and universal design into curricula and monitoring implementation progress.
- Establish recognition programs that highlight excellence in accessibility education, such as awards for innovative teaching methods or successful curriculum integration. These programs can incentivise institutions to prioritise accessibility and universal design principles in education and share best practices.
- Develop frameworks for international cooperation in accessibility education, facilitating knowledge exchange between institutions and countries. This could include funding for students and faculty mobility programs focused on accessibility studies.

To quality agencies and accreditation bodies

- Include the integration of accessibility and universal design in curricula as a mandatory requirement for the approval of HE programmes.
- Make clear what the expectations are with regards to integrate accessibility and universal design in HE programmes.
- Establish specific metrics to evaluate the effectiveness of accessibility and universal design integration in HE curricula, including both quantitative and qualitative measures. These metrics should assess not only the presence of accessibility content but also its impact on student learning outcomes.
- Create specialized accreditation pathways for accessibility-focused programs and courses, similar to existing specialized accreditations in other fields.
- Require regular accessibility audits that examine both the content and the teaching methods.

To educational leaders

- Embed accessibility and universal design in the university policies, procedures, and strategic plans.
- Promote initiatives aimed to raise awareness about accessibility and universal design, involving diverse stakeholders such as organisation of persons with disabilities, accessibility experts, and disability rights advocates.
- Provide training opportunities for staff regarding accessibility and universal design principles (an example of a course to train the trainers is available in 3.3).

To programme creators

- Include accessibility and universal design principles across all fields of knowledge, raising awareness about key concepts, user needs, and solutions.
- Include diverse range of stakeholders (e.g., Organisations of People with Disabilities, students' organizations, accessibility experts) in the design, implementation and evaluation of HE programmes.
- Integrate accessibility and universal design into all aspects of program design, from learning objectives to assessment methods, rather than treating it as an add-on component.
- Develop modular accessibility and universal design content that can be adapted for different disciplines while maintaining core principles and standards.
- Develop interdisciplinary collaboration on accessibility and universal design projects, helping students understand how different fields contribute to comprehensive accessibility solutions.

To instructors

- Take part in training programmes on accessibility and universal design aimed at HE instructors.

- Ensure that your course delivery is accessible and inclusive for students with disabilities, so you implement a ‘teach by example approach’.
- Include the concept and principles of accessibility and universal design in the training activities and materials as well as in the curriculum.
- Create communities of practice where instructors can share experiences, resources, and strategies for teaching accessibility and universal design concepts.
- Incorporate regular feedback from students with disabilities to improve course content.

To stakeholders (such user representatives and employers)

- Get involved in designing, implementing, and evaluating HE curricula.
- Work with local institutions to enrich professional field committees and similar bodies by including advocates for accessibility and representatives from diverse communities.
- Establish connections with educational leaders and programme creators. For instance, invite them for events you organise or ask for opportunities as guest lecturer.
- Provide opportunities for student internships and practical training in accessibility and universal design implementation.
- Contribute to developing case studies and real-world examples that can be used in teaching.

2.2. Tips and hints towards the implementation of the recommendations

To programme creators

- Include at least one learning outcome on universal design and accessibility in each programme.
- Make sure all university students, regardless of their area of knowledge, are able to communicate in an accessible way.

Suggested learning outcome for all areas of knowledge

Students shall be able to explain the needs of diverse users, identify solutions based on accessibility and universal design principles, and produce accessible digital documents.

Tips:

- To take inspiration, refer to the work done on integrating gender perspectives (e.g. the European Commission's [Gender Equality Strategy 2020-2025](#)) and sustainability (e.g. European Union [green education initiatives](#)).
- Include learning outcomes that cover accessibility and universal design principles specifically adapted to each field.

Suggested learning outcome for specific areas of knowledge

- **Translation Studies.** Students will be able to recognise the communicative, cultural, and accessibility needs of a diverse society and effectively respond to these needs within various contexts.
- **Educational Sciences.** Students will be able to assess the accessibility of learning materials available to them as educators and know how to apply accessibility requirements in their own field of study.
- **Computer Sciences.** Students will be able to develop software incorporating accessibility and universal design principles.
- **Architecture.** Students will be able to integrate accessibility and universal design principles into their designs and projects, ensuring inclusivity for a wide range of users across residential and public spaces.
- **Nursing.** Students will be able to communicate with persons of all abilities in an appropriate way according to their needs.
- **Medicine.** Students will be equipped to provide quality, accessible care, through a rights-based approach.
- **Law and Policy Studies.** Students will be able to analyse and interpret accessibility legislation and develop policy recommendations to improve accessibility standards.
- **Environmental Sciences.** Students will be able to integrate accessibility and universal design considerations into sustainable development projects and environmental planning.
- **Fine Arts / Cinema Studies.** Students will be able to create accessible artistic experiences and incorporate universal design principles in artistic expression.
- **Psychology.** Students will be able to understand the psychological aspects of accessibility barriers and develop inclusive therapeutic approaches.

To instructors

- Encourage students to communicate the outcomes of their research and studies in accessible ways, i.e., producing accessible digital documents, presentations, or other relevant formats, and provide support where necessary.
- Evaluate students mirroring real-world situations related to accessibility and universal design, fostering critical thinking and problem-solving skills.

Suggested evaluation strategies for all areas of knowledge

- **Project-based assessment.** Students work on semester-long accessibility projects that address real-world challenges, partnering with community organizations or businesses.
- **Portfolio development.** Students compile evidence of their growing understanding and application of accessibility and universal design principles throughout their program.
- **Peer assessment.** Students evaluate each other's work from an accessibility perspective, developing critical analysis skills.
- **Stakeholder feedback.** Include feedback from people with disabilities in the evaluation of student projects and solutions.

Suggested evaluation strategies for specific areas of knowledge

- **Translation Studies.** To evaluate the quality of the service provided based on a set of pre-established parameters.
- **Architecture.** To evaluate the effectiveness and inclusivity of the design solutions proposed by students.
- **Educational Sciences.** To evaluate the ability of assessing learning materials available to them as educators and know how to apply accessibility and universal design requirements in their own practice, including accessible assessment of their own students with disabilities.
- **Computer Sciences.** To evaluate the capacity to perform accessibility checks.
- **Law and Policy Studies.** To evaluate the ability to analyse accessibility legislation, propose policy improvements, and assess compliance with accessibility regulations in various contexts, to run accessible consultations.
- **Environmental Sciences.** To evaluate the capacity to design inclusive environmental impact assessments, ensure accessible public participation processes, and develop universally accessible environmental education materials.
- **Psychology.** To evaluate the ability to conduct accessible research studies, develop accessible assessment tools, and create accommodation strategies for diverse needs.

3. Sample courses

This section presents five sample courses, each designed by a partner institution as examples on how accessibility and universal design can be integrated in HE curricula. There are three at the BA level: 'Audiovisual Translation and Accessibility' (Universitat Autònoma de Barcelona, UAB), 'Digital Accessibility' (Masaryk University, MU), and 'Digital Accessibility' (Johannes Kepler Universität Linz, JKU). One course, 'Technology and Accessibility in Inclusive Education' (European University Cyprus, EUC), is at MA level. Additionally, a course titled 'Training of Trainers (ToEduL) – Disability, Inclusion and Accessibility' (European Disability Forum, EDF) is provided for lecturers and educational leaders across BA and MA programmes, focusing on the foundational principles of disability and accessibility.

The course on 'Audiovisual Translation and Accessibility' has been shared with UAB's committee updating the current BA in Translation and Interpreting. The course on 'Technology and Accessibility in Inclusive Education' is already available at EUC (though under the name 'Technology and Disability', in the MA Education Sciences: Special and Inclusive Education). There are two sample courses on 'Digital Accessibility' addressing different needs: one, designed for the BA in Computer Science and/or Artificial Intelligence at JKU, is pending implementation. The other, implemented in MU's BA in Information Service Design, launched in the winter semester of 2024/25. Finally, the 'Training of Trainers' course has yet to be piloted in a real-world setting.

All courses were specifically designed to address accessibility and universal design as core topics, based on insights gathered during a series of co-design sessions with diverse stakeholders. Further details on these sessions can be consulted in D2.1 "Focus Groups and Co-Design Sessions Reports".

3.1. Audiovisual translation and accessibility (UAB, BA in Translation and Interpreting)

Course syllabus

BA or MA: BA in Translation and Interpreting¹

¹ The BA title is still being discussed. We have used the current BA denomination.

Course title: Audiovisual translation and accessibility²

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 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: 2.³
- Accessibility and universal design in different environments: user profiles and user needs. Suggested number of 90-minute sessions: 2.
- 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.

² This course could be included as an elective course for BA in Journalism, Communication, etc.

³ 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.

- 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. Suggested number of 90-minute sessions: 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. (n.d.). *Course materials*.
<https://www.adlabpro.eu/coursematerials/>
2. Bogucki, Ł., & Deckert, M. (Eds.). (2020). *The Palgrave handbook of audiovisual translation and media accessibility*. Palgrave Macmillan.
3. Chaume, F. (2012). *Audiovisual translation: Dubbing*. St. Jerome.
4. Díaz-Cintas, J., & Remael, A. (2021). *Subtitling*. Routledge.
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8. O'Hagan, M., & Mangiron, C. (2013). *Game localization: Translating for the global digital entertainment industry*. Benjamins.
9. Pérez-González, L. (Ed.). (2018). *The Routledge handbook of audiovisual translation*. Routledge.
10. Taylor, C., & Perego, E. (Eds.). (2022). *The Routledge handbook of audio description*. Routledge.
11. Zárte, S. (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>

3.2. Technology and Accessibility in Inclusive Education (EUC, MA in Education Sciences: Special and Inclusive Education)

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. ³
- Digital divide, digital inclusion and digital literacy: barriers, opportunities and the role of technology. Suggested number of weeks: 1
- Accessibility and universal design in different environments: user profiles and user needs. Suggested number of weeks: 1
- Assistive technology for access in physical and digital environments: Functional and other user er needs and possible applications. Suggested number of weeks: 1
- Accessibility, technology and communication: AAC and beyond. Suggested number of weeks: 1
- Accessible 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 (UDL): 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 different 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 identify assistive technology 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 diverse 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. (2019). *Assistive technologies: Principles and practices*. Mosby-Elsevier.
2. Hoogerwerf, E. J., Mavrou, K., & Traina, I. (Eds.). (2019). *The role of assistive technology in fostering inclusive education: Strategies and tools to support change*. Routledge.
3. Lazar, J., & Stein, M. A. (2017). *Disability, human rights & information technology*. 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. <https://tinyurl.com/unicef2023guideatedu>
5. Rose, D. H., Meyer, A., & Gordon, D. (n.d.). *Universal design for learning: Theory and practice* (latest ed.). Cast. (e-book)
6. Ravneberg, B., & Söderström, S. (2018). *Disability, society and assistive technology*. Routledge.
7. Seale, J., & Nind, M. (Eds.). (2010). *Understanding and promoting access for people with learning difficulties: Seeing the opportunities and challenges of risk*. Routledge.
8. Tatnall, A. (Ed.). (2020). *Encyclopedia of education and information technologies*. Springer International Publishing.

3.3. Training sessions for Educational Leaders (EDF, Training course for lecturers)

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 type of accommodations that can remove barriers and create efficiencies.
 - Understanding of basic concepts of design for all and accessibility including digital, environmental and accessible communication.

Content:

- Introduction to disability inclusion (2 hours). 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.

- Introduction to Accessibility and Universal Design principles (2 hours). Introduction to Accessibility and Design for all. Experiences from people with disabilities. Describing accessibility and its importance and the principles of Universal Design.
- Digital Accessibility (2 hours). Introduction to Digital Accessibility. How to design, create, and evaluate accessible documents and presentations. Practical demonstration from person with disabilities.
- 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
- 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 and be able to apply solutions for users' needs in their own work.
- 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, videos as teaching tools and demonstration methods. The trainings sessions will be held in-person.

Evaluation: short questionnaire with open questions.

References:

ATHENA Project 101089469 - ERASMUS-EDU-2022-PCOOP-ENGO

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3. European Disability Forum. (2016). *European human rights report* (Issue 1). https://mcusercontent.com/865a5bbea1086c57a41cc876d/files/6d8bcc33-8054-7819-7bd3-51647f2bc17b/Human_Righst_Report_2010.pdf
4. European Accessibility Forum. (2019). *Guide for accessible meetings for all*.
5. EPRS | European Parliamentary Research Service Scientific Foresight Unit (STOA). (2018). *Assistive technologies for people with disabilities*. [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. Lulli, R., & European Disability Forum. (2021). *Accessible Word Toolkit - Digital Accessibility Training session #1*.
7. Lulli, R., & European Disability Forum. (2021). *Accessible PowerPoint Toolkit - Digital Accessibility Training session #2*.

3.4. Digital Accessibility (JKU, BA in Computer Sciences and/or BA in Artificial Intelligence)

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 will provide:

- 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.

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- 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 Disability and 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%).

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3.5. Digital Accessibility (MU, BA in Information Services Design)

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, gain an understanding of accessibility, disability, and the principles of universal 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. Additionally, students will learn about the limitations of quick-fix solutions like accessibility overlays and "disability dongles," which often fail to address underlying accessibility issues and can further marginalize users with disabilities.

- 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 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-understand 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) and the EN 301 549 standard, 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.

- Further (self-)education and certifications

The final section encourages students to continue learning beyond the course, offering guidance on self-education resources, certification programmes (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): Understand disability and 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 universal 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.

The course is modular and combines asynchronous and synchronous lectures. There is no fixed duration for each module; the time dedicated to each depends on the needs of the participants and the lecturer.

Evaluation:

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

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