Co-funded by the European Union

e-MeBe

e-Wellbeing and mental health in older adults

WP 3-2

Curriculum Design

e-MeBe project summary: The World Health Organization (WHO) emphasizes that "there can be no health or sustainable development without mental health[1]." Achieving the United Nations Sustainable Development Goal (SDG) 3, which aims to "promote well-being for all at all ages[2]," requires addressing mental health challenges, particularly among older adults. To address this need, an online Master's programme in e-mental health and wellbeing is proposed, focusing on equipping professionals with the competencies to leverage digital and cognitive technologies in enhancing mental health for older adults.
This programme prioritizes understanding the foundations of mental health, assessing and intervening effectively, and providing support through innovative technologies and community-building strategies. Key drivers for developing this initiative include the growing global emphasis on mental health as integral to sustainable development, the rising demand for specialized interdisciplinary knowledge in mental health for aging populations, and the potential of digital tools to bridge existing gaps in care (public, private).

The interdisciplinary curriculum is designed to support inclusive and diverse entrants from fields such as clinical practice, psychology, mental health nursing, disruptive technology, and industry, integrating core and advanced skills in digital mental health. Emphasis is placed on trust, transparency, safety, and ethics in mental health technology applications, ensuring professionals are well-equipped to address authentic and real-world challenges. The programme also focuses on interdisciplinary collaboration, reflecting the complexity of addressing mental health needs in older adults.

In a joint cooperation through an Erasmus+ project between universities from Austria, Finland, Germany and Ireland, we are developing a master's programme that addresses these SDGs challenges to support workplace resilience, and sustainability for an unscripted future.

[1] https://iris.who.int/bitstream/handle/10665/310981/WHO-MSD-19.1-eng.pdf?sequence=1&isAllowed=y
[2] https://sdgs.un.org/goals/goal3

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Executive summary

WP 3.2 Curriculum Design - eMEBE Curriculum Structure outlines the structured approach taken to develop a comprehensive curriculum for the e-Mental Health and Wellbeing in Older Adults (eMEBE) programme. This initiative aims to create a Joint Master's degree that integrates mental health and wellbeing principles into online education, specifically targeting the needs of older adults.

Curriculum Design Framework

The curriculum design process is anchored in collaborative engagement with stakeholders, including students, educators, and industry representatives. This approach ensures that the curriculum is not only relevant but also reflective of real-world needs. The workshop-based approach emphasizes the importance of aligning the curriculum with graduate competencies and industry standards, ensuring that graduates are equipped with the necessary skills for the evolving landscape of e-mental health.

Co-Design with Stakeholders

A significant aspect of the curriculum design process involved co-design workshops that utilized the Student Persona method. This method allowed for the creation of diverse student personas, representing various educational and professional backgrounds. The insights gained from these personas informed the curriculum's structure, ensuring inclusivity and relevance. The workshops facilitated discussions on the competencies required for effective practice in e-mental health, leading to the identification of key learning outcomes.

Programme Learning Outcomes

The curriculum development process resulted in the establishment of eight Programme Learning Outcomes (PLOs) that reflect the competencies necessary for graduates in the field of digital mental health. These outcomes encompass a systematic understanding of interdisciplinary concepts, knowledge of positive psychology, and the ability to critically evaluate evidence-based practices. The PLOs are designed to ensure that students can effectively communicate and collaborate within interdisciplinary teams, conduct advanced research, and engage older adults in the development of digital mental health interventions.

Assessment Maps

The document also outlines the development of an Assessment Map, which aligns module learning outcomes with the overall programme learning outcomes. This mapping process

ensures that assessments are meaningful and directly related to the competencies students are expected to achieve. The assessment strategies include a mix of formative and summative assessments, designed to evaluate both theoretical knowledge and practical skills. The emphasis on authentic assessments, such as case studies and digital artefact creation, reflects the real-world applications of the knowledge and skills acquired throughout the programme.

Key Competencies and Principles of Design

The curriculum is underpinned by key competencies that include mental health foundations, technology skills, ethical considerations, and collaboration across various sectors. The principles guiding the design emphasize inclusivity, relevance, and student-centricity, ensuring that the curriculum meets the diverse needs of learners. The integration of these competencies and principles into the curriculum design process enhances the overall quality and effectiveness of the educational experience.

List of abbreviations

ASD	Agile Software Development
CBE	Competency-Based Education
CD	Curriculum Design
CA	Constructive Alignment
LO	Learning Outcome
MA	Masters in Arts
MSc	Masters in Science
PLO	Programme Learning Outcome
RPL	Recognition of Prior Learning
UCL	University College London
SDG	Sustainable Development Goal
WHO	World Health Organization

1 Introduction

Curriculum Design (CD) refers to the structured process of creating effective, inclusive and authentic learning experiences underpinned by real-world assessment e.g. (Grant, 2018). Unlike "learning design," which typically focuses on smaller, short-term learning cycles, CD encompasses broader considerations related to the overall student learning journey ('the Persona'). This includes accredited learning within defined modules, courses, or entire programmes. CD aligns with programmatic goals, such as graduate competencies, and uses a substantive approach to ensure learning is effective, inclusive, meaningful and accessible.

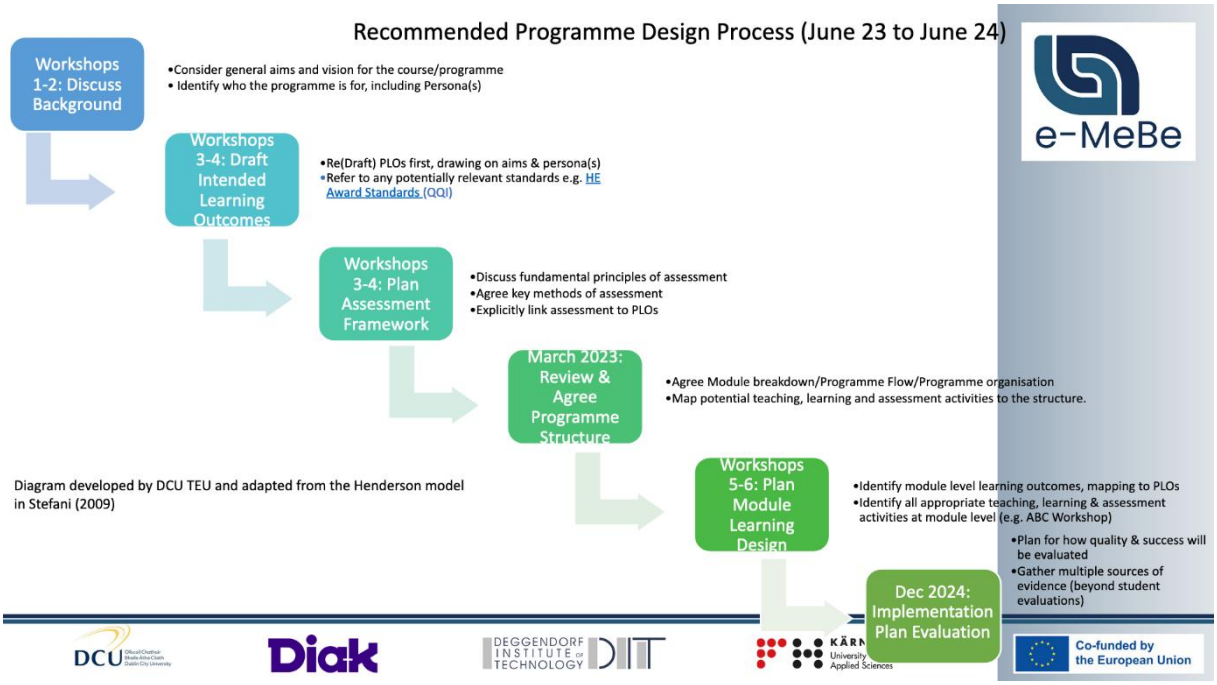
Key objectives of CD include creating new programmes, responding to feedback or evolving educational landscapes, ensuring parity of student experience, and aligning learning activities with programme goals. The Constructive Alignment (CA) approach[3] maps learning outcomes, assessments, and activities (Mendoza, 2022). This approach emphasizes student-centric learning, where students actively construct their understanding and are supported to meet the intended outcomes based on authentic assessment.

For the purposes of this report, entitled 'Curriculum Design', a series of six (6) DCU-led and authored (Teaching Enhancement Unit) workshops, including post-workshop activities, took place from June 2023 to July 2023, to facilitate a constructive alignment approach to developing a curriculum structure for the eMental Health and Wellbeing for Older Adults, as a fully online and flexible programme at Masters level for domestic (EU) and international students.

Workshops 1 and 2 focused on collaborative curriculum design using the Student Persona method, as detailed in the following report sections. Workshop 3 and 4 supported the collaborative ideation, development and confirmation of the programme Learning Outcomes based on a thematic analysis of the (1) Persona Workshop outputs; (2) the Graduate Competence Matrix (Work package 2), and (3) the Programme Aims, Vision and Background Workshop. A set of eight (8) Programme Learning Outcomes (or Statements) were agreed, and then a proposed structure of Module Learning Outcomes (Core and Elective Modules) was developed, and mapped as a matrix onto the Programme Learning Outcomes, with an Assessment Map as part of the overall Learning Design Framework (Workshops 5 and 6).

[33] https://www.johnbiggs.com.au/academic/constructive-alignment/

Figure 1 details the timeline for workshop 1 to 6, and some steps were iterative (Learning Outcomes; Assessment map) and overlapping with the final produced Module Handbook in Work package 4.



1.1 Collaborative Curriculum Design and Stakeholder Engagement

1.1.1 Co-Design with Stakeholders

Developing an e-Mental Health programme involved a collaborative approach, engaging key stakeholders—students, educators, employers, and industry representatives. This ensured that the curriculum reflects real-world needs and provides graduates with relevant competencies, and futures skills (or transversal skills, such as critical and creative thinking; collaborative skills; generative artificial intelligence knowledge and skills and effective communication skills; employability skills).

1. **Students**: Insights from student personas help map diverse needs and expectations based on educator experience. Using the ABC method[4], as the first in the DCU Workshop series based on a 2015 University College London (UCL) approach to collaboratively creating personas representing different learner profiles to guide curriculum design, ensuring inclusivity and relevance. This took the form of a half-day Workshop in June 2023, with follow-up persona refining, using the UCL template. Pre-ABC (Workshop 1), ABC (Workshop 2) and Post-ABC (input to Workshop 3[5]) supported the process of Persona thinking about the student experience and six learning styles (Laurillard, 2012). These include acquisition

[4] https://abc-ld.org/
[5] https://dcuh5p.com/abc/

(sensory and cognitive ways of engaging with content), investigation, Practice, Discussion, Collaboration and Production.

Acquisition (tools that can support content delivery, engagement and interrogation, from digital platforms such as moodle and google applications, to video content to zoom classroom, for example). Acquisition is typically mapped onto universal design principles of access to content (visual, auditory and so on), and the ability to engage meaningfully with content (asynchronously). Collaboration involves learning through discussion, practical application and implementation (production of artefacts of learning). Typically, this involves thinking about the type of knowledge, skills and values important to the student learning experience, and how to deliver and meaningfully assess learning in an interdisciplinary and collaborative way. Discussion is another phase that requires the learner to present their ideation in a way that can be challenged or interrogated by themselves (meta-skills) and others. This dovetails with persona thinking about challenge-based learning sprints[6] (e.g. hackathons, datathons, short design sprints) that guide ideation and implementation. Investigation is a later stage in persona thinking that requires learners to synthesise and critique artefacts related to conceptual ideas taught on a programme. Practice enables learners to self-reflect on procedural skills developed on a programme, and Production refers to ways that educators can motivate the learner to synthesise, apply and consolidate their learning in a meaningful way, through methods of feedback and assessment.

2. **Educators**: Their pedagogical expertise shape effective learning outcomes, assessments, and activities. As part of our workshops, our consortium was comprised of educators with experience in undergraduate and graduate teaching, and with some expertise in online teaching. In a parallel activity, WP3.2 Delphi, educators in Higher Education were also consulted about the proposed curriculum structure (see WP 3.1 Curriculum Framework).

3. **Employers and Industry**: Their input ensures that the programme aligns with current technological, ethical, and professional demands in e-Mental Health. In a parallel activity, WP3.2 Delphi, educators in Higher Education were also consulted about the proposed curriculum structure (see WP 3.1 Curriculum Framework).

4. **Interdisciplinary Collaboration**: Contributions from experts in mental health, education, and technology ensures the integration of key competencies like trust, ethics, and digital fluency. In a parallel activity, WP3.2 Delphi, educators in Higher

[6] https://www.dcu.ie/teu/challenge-based-learning

Education were also consulted about the proposed curriculum structure (see WP 3.1 Curriculum Framework).

5. In a parallel activity from September to December 2024, WP3.2 Delphi, Stakeholders (2-4) in Higher Education were also consulted about the proposed curriculum structure (see WP 3.1 Curriculum Framework).

1.1.2 The Design Process

1.1.2.1 Defining Competencies and Outcomes

Co-design begins with understanding the competencies needed for effective practice in e-Mental Health. This involves consultation with experts to outline foundational principles, such as mental health assessment, intervention, and community-building through technology.

1.1.2.2 Persona Mapping Using ABC

Student persona mapping focuses on defining: Student profile and prior learning; student Entry Requirements; Student motivations to engage in this programme; and Challenges that may block student engagement.

1.1.2.3 Designing Aligned Learning Experiences

Guided by Constructive Alignment, the programme integrates:

- **Learning Outcomes**: Clear objectives tailored to digital mental health competencies for core and elective modules (output of Work Package 2, input to Persona activity supported by DCU Workshop 1-2; Programme and Module Learning Outcomes, DCU Workshop 3-4).
- **Assessments**: Authentic methods to evaluate real-world skills (DCU Workshop 5-6).
- **Learning Activities**: Student-driven tasks promoting active construction of knowledge (DCU Workshop 5-6).

1.1.3 Key Competencies and Principles of Design

Key competencies in the e-Mental Health programme include:

- Mental health foundations and interventions.
- Technology skills for building digital solutions.
- Ethical considerations and trust-building in technology use.

- Collaboration across clinical, technical, and industrial sectors.

1.1.4. Principles guiding design:

- **Inclusivity**: Address diverse student needs.
- **Relevance**: Reflect current industry standards.
- **Student-Centricity**: Prioritize active, meaningful learning.

By involving stakeholders and using structured processes like ABC mapping and CA, the e-Mental Health curriculum ensured a robust, innovative, and practical learning experience. The following Section 2 details the Pre-, Per- and Post-Persona phases of activity guided by DCU in exploring possible student narrative, personas and learning journeys by using the ABC method.

2 The Student Persona and Learning Journey – ABC Approach

A Persona Card (Learning Design) approach was led out by DCU (June 14, 2023) to support persona development for at least one type of student entrant from each Erasmus partner, with agreed post-ABC outcomes including a narrative synthesis of Personas to extract a key template, and input into Result 2 (Curriculum Design). The activity was developed as a creative commons' artefact by the Open University H817 module 'Openness and Innovation in eLearning'[7]. The template used[8] was adapted for the eMEBE project to include Persona student name, Preferred gender, Age, where domiciled, Relationship and work status (to determine time commitments etc.), Education and Experience, Role and Responsibilities, Technical Skills (on entry, and competencies on graduation), Subject domain skills and knowledge (on entry, and competencies on graduation), Motivation and desires to study the eMEBE programme, Goals and Expectations of the Learner, Obstacles to Student success, and finally, Unique assets (or why this student entrant might want to advance their career with the eMEBE programme given their prior learning journey).

[7] https://www.open.ac.uk/library/digital-archive/module/xcri:H817/study
[8] https://www.open.ac.uk/blogs/learning-design/wp-content/uploads/2024/10/Student-personas-1.pdf

Figure 2 DCU eMEBE Learner Persona

	Name: **Gender:** **Age:** **Lives in … with … Likes …**
Education and experience	
Role and responsibilities	
Technical skills	
Subject domain skills and knowledge	
Motivation and desires	
Goals and expectations	
Obstacles to their success	
Unique assets	

Note: Consider the Persona entrant and graduate for technical skills, Subject Domain, and Unique assets.

2.1 Key features

The Persona Method, rooted in human-centred design principles, focuses on creating student-centric curricula by using fictional (or template based on educator experience) personas to represent diverse learner profiles (Zagallo P, 2019). These personas are

developed through research and data, such as demographic information, learning styles, motivations, and potential barriers to learning. The ABC approach—representing Active, Blended and Connected (University of Reading ABC approach)[9] —is particularly useful in identifying how different learner types engage with educational content and navigate the learning experience.

The ABC Learning Design Workshop (adapted from the University of Reading, whose materials were an adaptation from Swansea University and DCU), supported the development of the eMEBE programme curriculum with respect to the core and elective module guides, including the agreed learning outcomes for each module, and a storyboard of the student journey, where a learning outcome (mapped onto the programme learning outcomes) is assessed (either formative or summative). The storyboard includes a visual map (grid) of the types and sequence of learning activities in each module (input to work package 4 – Handbook), and a discussion of collaborative or group-based activities, methods of enquiry, discussion and content acquisition, as well as how the student can reflect on key learnings, and produce artefacts of learning.

The Persona Method chimes well with constructive alignment (Mendoza, 2022), which emphasizes aligning learning outcomes, assessments, and activities to support diverse student needs. It is a user-centred design approach that uses fictional characters (personas) to represent diverse characteristics and needs of a specific user group – in this case, potential students enrolling on the master's for eMental Health and Wellbeing for Older Adults. The methodology is rooted in ethnographic research and captures the complexities of the student learning journey, and educator thinking, practice and context. For example, a curriculum designed for working professionals in eMental Health might prioritize flexibility, integrating asynchronous modules and real-world assessments in digital therapeutics.

There are several methodological considerations, including (1) Data collection – qualitative scenario mapping with educators using Workshops 1-2, focusing on instructors' thoughts, beliefs and practices regarding teaching and learning for this specific student cohort (Zagallo P, 2019, pp. 1,8); (2) Categorisation of 'Users' or 'Students' – what information is essential for designing a curriculum for diverse cohorts – and how to support with instructors' values, teaching practices and challenges; (3) Data Processing – using qualitative coding practice (or thematic analysis - (Braun, 2006)) to extract themes and relationships; (4) Persona creation involves developing a persona skeleton, which is fleshed

[9] https://sites.reading.ac.uk/tel/abc-active-blended-connected-curriculum-design/

out into full personas, representative of a distinct student cohort with specific traits, values and motivations to study; and (5) Validation, where personas are validated through instructor feedback and discussion (Zagallo P, 2019).

2.2 Advantages

The Persona Method has many advantages including adopting a user-centred approach by focusing on the anticipated needs and characteristics of potential students of the eMEBE programme; empathy as potential student motivations, barriers to study and challenges engaging in study can be incorporated into meaningful learning design; reduction of complex information into Persona templates to make it easier for potential students, and stakeholders to grasp the diversity of student learning journeys. Of course, there are limitations to using this method as these student representations are static, until such time as programme implementation can produce graduates where their authentic feedback can fine-tune the programme structure and learning design.

2.3 Main Findings

Based on the Persona method, the following thematic sub-headings were used to craft and validate five (5) Student Personas. Please see Appendix one for overview of the five personas. Please note that proposed social demographics and other descriptors are not intended to represent the views of any one of the consortia in terms of cohort profile (gender, where domiciled, family status etc.), nor are intended to endorse any stereotyped view of a student cohort. Rather, these personas were developed and discussed to qualitatively analyse student motivations, challenges and insight into anticipated learning journeys are part of the curriculum. Some information has been redacted or reduced in order to portray each Persona.

Heading 1 - Social Demographics

- Name: [Name of persona]
- Gender: [Gender identity; may vary based on demographic research]
- Age: [Age, aligned with target student demographic]
- Location: [City, country, and living situation; consider family or dependents if applicable]
- Interests: [Hobbies or personal interests that add depth to the persona]

Heading 2 - Education and Experience

- Entering: [Relevant prior educational qualifications, e.g., bachelor's degree or certifications, and professional experience aligned with programme prerequisites]
- Leaving: [Desired qualifications and professional experiences upon programme completion, emphasizing career progression and skill acquisition, may be bespoke to elective or specialism pathway]

Heading 3 - Role and Responsibilities

- Entering: [Current job role, responsibilities, or lack thereof; reflects existing professional standing]
- Leaving: [Expected responsibilities and roles after graduation, aligned with career goals]

Heading 4 - Technical Skills

- Entering: [Basic or intermediate technical skills, e.g., proficiency in MS Office, programming languages, or statistical tools]
- Leaving: [Advanced technical and digital skills targeted by the program, e.g., coding, data analytics, online counselling tools]

Heading 5 - Subject Domain Skills and Knowledge

- Entering: [Initial knowledge and skills in specific domains relevant to the programme, e.g., psychology, social-science, health-science, pharmacy, or nursing or industry]
- Leaving: [Expanded domain expertise and interdisciplinary knowledge aligned with the programme's learning outcomes, e.g., mental health, e-health applications]

Heading 6 - Motivation to Study

- Personal Goals: [Intrinsic and extrinsic motivations, such as career advancement, skill enhancement, or societal impact]
- Professional Desires: [Specific career aspirations, e.g., leadership roles, technical expertise, or starting a business]
- Educational Interests: [Interest in interdisciplinary approaches, practical applications, or specific technologies]

Heading 7 - Key Challenges

- Time Management: [Constraints such as family responsibilities, professional commitments, or preference for part-time study]
- Financial Barriers: [Cost of education, visa requirements, or need for part-time work]
- Knowledge Gaps: [Limited prior experience in specific domains or lack of exposure to programme-related concepts]

Heading 8 - Barriers

- [Specific obstacles that could hinder success, such as unfamiliarity with e-health, low prior technical expertise, or financial insecurity]

Heading 9 - Unique Assets

- Personal Strengths: [Ambition, commitment, or eagerness to learn]
- Professional Strengths: [Practical experience, existing technical skills, or interdisciplinary adaptability]
- Social Contributions: [Volunteer work, community involvement, or leadership potential]

This DCU template can be customized for curriculum design by integrating specific programme goals, learning outcomes, and student-centric pedagogical approaches, ensuring inclusivity and relevance, and informed the Framework approach adopted by the eMEBE project.

2.4 Persona characteristics – Key Findings

The Persona Method produced five different Student personas with varied education and work experience, from a BA or BSc in Psychology (two personas), to a BSc in Pharmacy (two personas) to Nursing with a Mental Health focus (one persona).

2.4.1 Applied Psychology Persona

For both Psychology entrants, the anticipated learning journey was an expectation of broader digitization skills and transdisciplinary understanding of the e Mental Health field, with one Persona studying Psychology and Disruptive Technologies as an undergraduate, and with additional qualifications in Data Science, and with internship experience with an online coaching company. Both personas are recent graduates with limited work experience – one holding a lower management role coordinating a small team within industry, and with an expectation that the programme will lead to a higher management role on graduation, such that this person could lead a digital transition process in their company (e Mental Health space). The other persona has limited experience in clinical work, but extensive volunteer experience (e.g. using serious games to address pain relief in children with cancer). On graduation, this persona would like to work as a clinical psychologist, so this programme will be a springboard to achieving this goal – but first, the person would like to work in an eHealth company (potentially a start-up).

Both Psychology personas were quite different in terms of technical skills on entry, and, on graduation. For example, one Psychology person, with an applied Psychology degree, had basic technical skills, such as MS office, and statistical programming using drag-and-drop licenced software (SPSS), but on graduation, would like to have achieved competency in basic coding and scripting in Data science (Python), and understand, as well as apply, the design thinking in process transformation within a digital framework. The graduate in Psychology and Disruptive Technologies, on the other hand, demonstrates far more sophisticated competencies on entry in project experience, statistical reasoning, and programming (Python and R), and has internship experience with a Global consulting firm on behaviour change and consumer decision making. On graduation, this person would like to have attained advanced knowledge in eHealth applications (including mental health), data science, behaviour change and policy and would like some experience within the programme of working with a startup, social enterprise or company in a research role.

Subject or domain specific skills were also different for both Psychology personas: (1) the applied Psychology persona has basic mathematics and competency in English, whilst the (2) Psychology and Disruptive Technologies graduate, a native English speaker, has advanced digital and numeracy literacy, including research skills, data visualisation and coding skills. The applied persona would like to attain transdisciplinary grounding in eMental Health and Wellbeing and be able to perform a role within a 'continuum of support and care in mental health'. The Disruptive Technologies persona has a similar focus on graduation, but with an added emphasis on policy in eHealth, project management and leadership or influencing skills (e.g. advocacy) in the eMental Health space.

Motivations were somewhat similar for both Psychology personas: both want to achieve an interdisciplinary experience in the programme, and this points to both content (knowledge), skills (mental health modules, technical modules, policy module etc.) as well as attitudes or values (e.g. advocacy, ethics, trust in technology). This interdisciplinary focus should be supported by structured group work through a series of authentic challenges, and this points to the types of learning and assessments that should be embedded within the programme. The Disruptive technologies persona is also motivated to work in eMental Health as a practitioner, involved in screening, assessing and designing interventions using digital therapeutics.

For both Psychology personas, their study goals were to experience a high-quality ('top-degree'), flexible study programme, bespoke to their learning needs (and how they best learn with time constraints); and the Disruptive Technologies persona additionally wants to gain practical experience in eMental Health, and publish research on e-interventions. Obstacles to studying were remarkably similar, time-management and how the programme supports (and recognises) their prior learning and experience. From the time-management perspective, the applied Psychology person might best prefer a stackable degree (series of micro-credentials that stack, one on top of the other, to build a masters degree) or a part-time degree, whereas the Disruptive Technologies persona might best prefer a shorter intense degree programme, given that the ultimate goal is to pursue a clinical doctorate in Psychology. Fees are an obstacle for this persona, and the 'value' of the degree is very important to this persona in terms of reputation, and interdisciplinary focus, as well as providing the opportunity to gain experience in eMental Health. Analysing the goals and expectations dovetail with important aspects of curriculum alignment – key learning goals of the programme, learning activities that map onto goals, and how they are delivered and supported (timing, feedback, types of learning activities that suit the learner).

2.4.2 Pharmacy Persona

For both pharmacy personas, a degree in Pharmacy is their highest level of education, and one has a laboratory-based work profile, whilst the other has some experience of working

in a community pharmacy. Whilst both had limited role experience in their respective contexts, the community pharmacist had client interfacing experience ('over the counter'), some procurement and logistics skills, but wants to work as chief scientific officer (or Product Research and Development, Patent) in an agile development team at a startup. One persona is a native English speaker and has basic technical skills in MS office, basic C++, and Python, basic medical knowledge and pharmaceutical knowledge within industrial settings (Lab persona), whilst the other community pharmacist persona has basic medical and mathematical knowledge, with advanced chemistry and coding skills. The latter persona wishes to advance their knowledge and skills in 'scientific working methods', Agile Software development (ASD) approaches in healthcare, and Data Science and Visualisation. This is an interesting focus for learning design, as ASD is not the norm in eMental Health application development, but is a fast-growing tool (Kokol, 2022), and is at the forefront of digital approaches in this space. In terms of motivation to study, and study goals, both personas seek to improve their financial earning and career opportunities within the EU. Additionally, for both personas, and in contrast to the Psychology personas, the fee requirements (as well as visa requirements) were considerations here, and time-constraints with respect to continued working whilst studying is also important for both personas.

2.4.3 Nursing Persona

The Nursing persona has a bachelor's degree in Nursing, with five years of experience in mental health nursing (substance-abuse and addiction work). Similar to the Pharmacy personas, the Nursing persona is a registered practitioner and subject to professional accreditation. (Note: in fields such as Psychology, Pharmacy and Nursing, professional accreditation bodies across various jurisdictions are involved in accreditation of the programme, and practitioner. In the Psychology personas discussed above, both had only undergraduate training or pre-professional training in Psychology, and were not registered as a clinician). On entering the programme, the Nursing persona would be a registered nurse, with experience in client counselling and addiction treatment, and would like to achieve advanced competencies in coordinating and developing mental health care for clients within a digital therapeutic space. This persona has basic technical skills such as MS Office, social media, hospital or community patient management systems), but on graduating from the programme, would like to have online counselling skills, specifically from the preventative or early intervention perspective. Note: across jurisdictions, there are different professional regulatory bodies for counsellors from Nursing and Psychology, and this may have to be an additional consideration for the programme, should it address a 'professional' component. Similar to the Pharmacy personas, the Nursing persona has basic medical and drug action knowledge (note that the Disruptive Technologies personas has basic drug action and neuroscience knowledge, with some computational neuroscience

skills). On graduation from the programme, the Nursing persona wishes to advance their skills and knowledge in mental health and online counselling and work as part of an interdisciplinary team in a virtual hospital environment, such as https://www.mielenterveystalo.fi/en . A similar theme to the other personas emerged for the Nursing persona – time is crucial in terms of juggle (in this case, the persona is a single-parent with children and a working professional and a student). The persona would prefer a part-time mode, as a full-time mode may not be financially, and temporally, feasible, and there is a pressure to graduate within the shortest learning cycle possible to advance their career prospects.

2.5 Common Themes and Conclusions

Educational Background and Skills Development: All personas enter their respective programme with foundational knowledge in their fields, such as psychology, pharmacy, or nursing. However, they exhibit varying levels of technical skills. For instance, the Applied Psychology personas show a desire to enhance their digital competencies, particularly in data science and coding, reflecting a trend towards integrating technology in mental health practices (Kokol, 2022). Similarly, the Pharmacy personas express a need to advance their knowledge in scientific methods and agile development, indicating a shift towards innovative practices in healthcare.

Interdisciplinary Focus: A significant motivation across all personas is the desire to gain interdisciplinary knowledge and skills. The Applied Psychology personas aim for a transdisciplinary understanding of e-mental health, whilst the Nursing persona seeks to coordinate mental health care within a digital therapeutic framework. This reflects a broader trend in education where interdisciplinary approaches are increasingly recognized as essential for addressing complex health issues (Shahid, 2024).

Career Aspirations and Professional Development: Each persona has clear career goals that align with their educational pursuits. The Applied Psychology personas aim for roles in clinical psychology and eHealth companies, whilst the Pharmacy personas aspire to positions such as chief scientific officer or roles in product research and development. The Nursing persona seeks to enhance their capabilities in online counselling and mental health care coordination. This ambition underscores the importance of aligning educational programmes with industry needs and career pathways (Papageorgi, 2024).

Challenges and Support Needs: Time management emerges as a common challenge for all personas, particularly for those balancing work, study, and personal responsibilities. The Nursing persona, for example, is a single parent managing multiple commitments, which influences their preference for part-time study options. Additionally, financial

considerations, such as tuition fees and the perceived value of the degree, are significant factors affecting their educational choices and career trajectories (Muangkaew, 2022).

Desire for Practical Experience: All personas express a strong desire for practical experience that complements their academic learning. The Applied Psychology personas seek internships and research opportunities in eHealth, while the Nursing persona aims to work in interdisciplinary teams within virtual healthcare settings. This emphasis on experiential learning highlights the need for educational programs to incorporate real-world applications and collaborative projects to enhance student readiness for professional roles (Esempio, 2024).

In conclusion, the five personas reflect a shared commitment to advancing their skills and knowledge in their respective fields, with a strong emphasis on interdisciplinary (or transdisciplinary) learning, practical experience, and the integration of technology in healthcare ('digital therapeutics'). Their motivations and challenges are key to understanding the importance of designing educational programmes that are flexible, relevant, and supportive of diverse student needs, ultimately preparing them for successful careers in an unscripted future of digital mental health and healthcare services.

3 Co-Design with Experts – Programme and Module Learning Outcomes

3.1 Workshops with educators and experts in Mental Health and Technology

Workshops 3-4 supported an online platform to discuss the persona profiles, and also, the competency matrix generated in work package 2, as inputs for the programme learning outcomes activity. In zoom breakout rooms, participants worked in groups of 3-4 to generate learning outcome statements, after critically reviewing learning outcomes from other potentially similar master programmes in Ireland, the UK, Finland and internationally. Attention was paid to the Bloom's Taxonomy, and also, the wording used to capture specific, measurable and authentic outcomes. DCU resources, such as the Guide on how to write Learning Outcomes were shared[10], as part of the ideation, and later, refinement processes.

Text from Workshops 3-4 (PowerPoint text capture, zoom chat capture, minutes taken from group discussions that manifested as 13 distinct learning statements), as well as the Persona profiles (text capture from template for five personas) and also, the twelve

10 https://www.dcu.ie/sites/default/files/staff/2024-10/public-dcu-guide-to-writing-learning-outcomes-at-dcu_updated-july-2023.pdf

competency statements, were inputs into extracting key themes as part of data reduction with the aim of generating eight Programme Learning Outcome statements, using Bloom's taxonomy of Knowledge, Skills and Values/Attitudes ((Editor), 1956).

A process of Braun and Clarke (Braun, 2006) thematic analysis and data reduction were applied to the input text, and as a result, as well as being guided by curriculum frameworks (see WP3.1 Curriculum Design) for timing, ECTS, number of core and elective/specialism credits, the below structure was proposed.

Table 1 Proposed Curriculum Structure

Programme Title: MSc or MA in Digital Mental Health and Wellbeing (eMEBE)

Programme Level: Master's degree (Level 7 European Qualifications Framework)

Mode: Online delivery

Duration: Two Academic Years (Three Academic Semesters for DIAK).

ECTS (Credits): 120[11]

Programme Focus:

The World Health Organisation (WHO) has acknowledged that there can be 'no health or sustainable development without mental health'. More needs to be done to achieve the United Nations (UN) Sustainable Development Goal or SDG 3 of 'promot[ing] well-being for all at all ages', and in particular, this includes the older adult. This Master programme will focus on core and additional competencies related to digital mental health for the older adult from a number of perspectives: understanding the foundations of good mental health, and how to assess, intervene and support mental health, and also how to build technologies and communities in this approach. Key mental health and technology skills, including trust, safety and ethics, are embedded within this programme for entrants from clinical, nursing, psychological, technical and industrial sectors.

Note: A student taking the MSc or MA **full time** might take a version like this. Year 1 = 60 credits. Please note that RPL refers to Recognition of Prior Learning. For DIAK entrants, with at least two years relevant work or clinical experience, and based on their application

[11] For DIAK, 30 ECTS will be Recognition by Prior Learning (RPL) as determined by their host institution, and the remaining 90 ECTS will be successfully achieved by completing 60 ECTS in core modules and 30 ECTS thesis.

to study this masters, RPL may be granted for the modules outlined below in Table 1 based on the host institution review (in grey).

Year 1 Semester 1					Year 1 Semester 2			
	Module Title	**Core/ Elective**	**ECTS**	**Semester (Block Code)**	**Module Title**	**Core/ Elective**	**Credit**	**Semester (Block Code)**
RPL	**Introduction to Applied Research Methodologies**	Core	5	1	**Research Clinic, Advanced Qualitative, Quantitative and Mixed Methodologies**	Core	10	2
	Foundations of Qualitative and Quantitative Methods and Statistics	Core	5	1				
RPL	**Foundations of Older Adult Mental Health**	Core	10	1	**eHealth, eWell-being and Digital Therapeutics**	Core	10	2

Year 1 Semester 1					Year 1 Semester 2				
	Older Adult Wellbeing and Positive Psychology	Core	10	1		**Human-Centred Design in Digital Mental Health**	Core	10	2

Note: A student taking the MSc or MA **full time** might take a version like this. Year 2 = 60 ECTS, for DIAK, 30 ECTS from Semester 1 core modules, and 30 ECTS associated with the research thesis. All other students can choose 15 ECTS from the Option (Elective modules). Please note that RPL refers to Recognition of Prior Learning. For DIAK entrants, with at least two years relevant work or clinical experience, and based on their application to study this masters, RPL may be granted for the option modules outlined below in Table 2 based on the host institution review (in grey).

Table 2: Year 2 of the MSc or MA. Please note that the Applied Research Thesis and Ethics module will begin in Year 1 Semester One for DIAK students and terminate in Year 2 Semester 1. For now, it appears in Year 2 of the Structure.

Year 2 Semester 1					**Year 2 Semester 2**				
Module Code	**Module Title**	**Core/ Elective**	**ECTS**	**Semester (Block Code)**	**Module Code**	**Module Title**	**Core/ Elective**	**Credit**	**Semester (Block Code)**
	Person-centred e-Mental Health Skills	Core	5	1	RPL (15 ECTS)	Option 1	Elective	5	2
	Technology, Artificial Intelligence, Trust and Ethics	Core	10	1		Option 2	Elective	5	2
						Option 3	Elective	5	2
	Applied Research Thesis and Ethics	Core	15	0		**Applied Research Thesis and Ethics**	Core	15	0

Option Electives (choose three)

Below is the list of the 5 ECTS option (Elective) specialism modules that are thematically related to (A) a technology Pathway, or (B) an eHealth/clinical Pathway. Any combination of three modules from either or both pathways may be considered.

A. Technology Pathway

Innovation, Disruption and Sustainability in eMental Health

Topics in Innovative and Disruptive Technology in eMental Health

E Journal Club: Human and Societal Enhancement

Introduction to Machine Learning & Data Analytics

eHealth Pathway

Community and Inclusive Mental Health Practices

Psychosocial Dynamics and Therapeutic Approaches for the virtual clinic

Digital Citizenship

Law, AI, Cognitive Technologies and Robotics

Programme Learning Outcomes

Based on a series of exercises, including a systematic and thematic analysis of the competency statements agreed (12 competency statements), persona workshop sheets about expected knowledge, skills and values to be attained by students on this masters programme (5 personas), and programme learning outcomes workshop content (13 workshop outcome profiles), eight programme learning outcomes were developed based on Bloom's Taxonomy. This includes Knowledge (Breadth and Kind of Knowledge), Skills (Range and Selectivity) and Competences (Context, Role and Learning to Learn). As part of this approach, a focus on embedding transversal or futures skills (personal agility, critical and creative thinking, teamwork and collaboration) throughout the structure is also important, and maps onto competencies highlighted by the consortium.

[1] Programme Learning Outcome Knowledge (Breadth)

The learner will acquire a systematic understanding of interdisciplinary key concepts, theories and practice of the specialist area of digital mental health applications and services and gain insights into how different disciplines contribute to the development of e-mental health approaches for the older adult. This should include familiarity with; the core components of the interdisciplinary field; major theoretical perspectives; evidence-based practice; policy perspectives; research methodologies; and empirical findings.

[2] Programme Learning Outcome Knowledge (Kind)

The learner will demonstrate knowledge of positive psychology, wellness strategies, and practices, and will be aware of factors that promote mental health for the older adult, including where mental health conditions are present. The learner will critically assess the state of evidence-based e-mental health practice in the area of older adult well-being. The learner will recognise key ethical, legal and policy issues and demonstrate knowledge of risk management strategies; and identify appropriate mental health and psychological applications and interventions in older adult e-mental health and well-being.

[3] Programme Learning Outcome Skill (Range)

The learner will acquire the skills to effectively communicate and collaborate with diverse and interdisciplinary teams to develop impactful interventions in e-mental health for the older adult. The learner will evaluate advanced applied and experimental methods of mental health study in e-mental health and well-being, including emerging and artificial intelligence techniques. The learner will identify, choose, conduct and interpret appropriate statistical analyses. The learner will critically evaluate the current state of interdisciplinary research in e-mental health and well-being of the older adult; Integrate knowledge and research skills to design and conduct advanced studies to address mental health questions in using appropriate research methods; Follow the Code of Ethics in the treatment of human participants; and also act in accordance with legal requirements for data protection.

[4] Programme Learning Outcome Skill (Selectivity)

The learner can engage older adults as end-users in the digital mental health interventions development and participatory co-design process. The learner is able to motivate, support, and train older adults to increase their digital e-mental literacy skills by taking into account their learning needs. This should include a respect for and use of critical and creative thinking, an evidence-based approach to solutions related to e-mental health by: An advanced ability to use critical thinking skills effectively; An advanced ability to engage in

personal agility and creative thinking; An advanced ability to utilise statistical, logical and ethical reasoning to recognise, develop, and critique arguments and other persuasive appeals; An ability to approach problems flexibly and effectively.

[5] Programme Learning Outcome Competence (Context)

The learner demonstrates competencies in effective communication in a variety of formats; Advanced writing skills for expert and non-expert audiences; Advanced evaluative skills; Effective oral communication skills; Effective interpersonal communication skills in academic, industry and other professional contexts; An ability to collaborate effectively in research and professional settings; An ability to use advanced skills to conduct research.

[6] Programme Learning Outcome Competence (Role)

The learner is committed to mental health promotion in the form of multi-dimensional health and respects autonomy and self-determination of the individual older adult.

[7] Programme Learning Outcome Competence (Learning to Learn)

The learner actively challenges and works to reduce mental health stigma, fostering a non-judgmental and inclusive attitude towards individuals with mental health concerns and their families; The learner adopts a person-centred approach, valuing the unique experiences, preferences, and strengths of individuals, families, and communities in the provision of mental health services. The learner demonstrates personal agility, insight, goal setting and good self-regulation; Displays high standards of personal integrity with others; Demonstrate an awareness of the need to engage in continuous personal and professional development; Demonstrates motivation, independence and flexibility in the pursuit of personal and professional goal attainment.

[8] Programme Learning Outcome Competence (Insight)

The learner acknowledges unconscious stigmatising attitudes. The learner has a hopeful and motivating attitude and is able to treat older adults with mental health problems with dignity and empathy. The learner is open to increased adoption and usage of new digital mental health technology and has a firm understanding of the need for openness, trust, safety, cultural sensitivity and ethical deployment of e mental health solutions.

Competency Statements as agreed by the consortium in a prior work package activity appear (reproduced with their permission) below, and inform the programme learning outcomes and module content.

[1] Applies specific knowledge and solutions of multidimensional holistic health (incl. mental, physical, and social health) with an aim to promote individual older adults' overall health / with regard to the older adults' needs.

[2] Applies advanced knowledge of normal development, transition and changes in older age, active lifestyle and healthy aging.

[3] Masters principles of appropriate health counselling interventions in responding to older adults' and their carers needs.

[4] Synthesizes a comprehensive understanding of evidence-based practices and client-centred care principles in clinical decision-making.

[5] Demonstrates advanced competence in the delivery of comprehensive and culturally sensitive mental health services within diverse community settings; Integrates theoretical knowledge, evidence-based practices, and practical skills to promote the mental health and well-being of individuals, families, and communities.

[6] Applies advanced knowledge to promote mental and physical health and wellbeing as well as social involvement among older adults. Therapeutic and pedagogical skills to support equal mental health and wellbeing among older adults. Advanced knowledge related to lifespan issues in terms of wellness and positive psychology as a core component of mental health (incl. salutogenesis) determinants of mental health, and what factors support and threaten individual wellness. Advanced knowledge, supporting skills and attitudes (supportive, motivational, negotiating, and empowering skills) to promote positive mental health, abuse prevention, disease prevention and early signs in older age (typical mental health diagnosis and problems, and comorbidity aspects as well as social inclusion and marginalisation risk)

[7] Applies advanced knowledge to promote mental and physical health and wellbeing as well as social involvement among older adults. Therapeutic and pedagogical skills to support equal mental health and wellbeing among older adults. Advanced knowledge related to lifespan issues in terms of wellness and positive psychology as a core component of mental health (incl. salutogenesis) determinants of mental health, and what factors support and threaten individual wellness. Advanced knowledge, supporting skills and attitudes (supportive, motivational, negotiating, and empowering skills) to promote positive mental health, abuse prevention, disease prevention and early signs in older age (typical mental health diagnosis and problems, and comorbidity aspects as well as social inclusion and marginalisation risk)

[8] Masters principles of person-centred e-mental health interventions and is committed to improve the quality of interventions together with interprofessional team members.

[9] Plans, implements and evaluates (critically) client-oriented digital health technology and their usage.

[10] Applies appropriate health and wellness-oriented e- health applications/solutions in supporting older adults' mental health promotion and minimizing distress among those living with mental health problems. Evaluates the adoption, utilisation and usability of e-mental health and wellbeing applications/solutions and implementation processes that promote good older adult service user experience in a safe and cost-effective manner.

[11] Plans, implements and evaluates processes related to the adoption, utilisation and usability of available data and AI applications/ solutions among older adult mental health service users. Acts as an expert in a multi-professional team when decisions on new purchases and development goals are made.

[12] Acts according to the ethical principles (beneficence, nonmaleficence, autonomy, and justice), laws and regulations governing e- mental health and wellbeing technology applications and solutions.

4 Assessment Mapping

4.1 Module Descriptors: ECTS, Competence Map, Example Learning Outcomes and Example Assessment.

This suite of core research modules provides a tool-kit of key qualitative and quantitative methodologies, approaches and tools to ideate, submit for ethical approval, implement and analyse data as part of a primary or secondary data collection study based on e-mental health and the older adult.

Curriculum Design frameworks and principles from the Integrative review and Delphi study (see WP 3.1 Curriculum Design), informed the learning design approaches for core and specialisms, and the associated assessment plan, which was confirmed with two overlapping activities – work package 4 module handbook summit meeting (June 2024) and the DCU Teaching Enhancement Unit critical evaluation of the curriculum structure, pedagogical approach and assessment map.

****Module 1: Introduction to Applied Research Methodologies**

Description: This module will introduce students to the most research methodologies in psychology and cognate fields (Nursing, Health Sciences). It will familiarise students with the research cycle, from literature search, source and review, to developing a research idea, and the toolkit of methods (quantitative, qualitative) that can be used to address a research problem. How to write an abstract in plain language will also be explored.

Credits: 5

Year: 1

Semester: 1

Competence Statement Number: Research and Digital Literacy

Example Module Learning Outcomes:

1. Be able to identify and evaluate key methodologies (quantitative and qualitative) in research
2. Be able to conduct a literature review on a topic of interest
3. Be able to synthesise the literature and critically review reported findings and impacts
4. Be able to write a plain language summary of key findings and impacts of published empirical research

Example Assessment:

1. Critical Journal article review: students are required to extract research questions, methodology adopted, analysis plan and reporting, and critically comment on the interpretation of a chosen peer-reviewed publication based on a selective literature review. Students are also required to write a plain language summary of the key findings and impacts reported by this journal article.

Module 2: Foundations of Qualitative and Quantitative Methods and Statistics

Description: This module will introduce students to the most common quantitative and qualitative analytic techniques in psychology and cognate fields (Nursing, Health Sciences). It will familiarise students with basic statistical tests, their appropriate usage and how to compute the tests using SPSS or R; and also basic approaches to analysing qualitative data. The module also supports the development of skills including data analytics and visualisation. A strong emphasis is placed on enabling students to integrate theory and statistical reasoning skills, including analytic competence, using laboratory experiments, practical laboratory classes and online labs.

Credits: 5

Year: 1

Semester: 1

Competence Statement Number: Research and Digital Literacy

Example Module Learning Outcomes:

5. Demonstrate the ability to import, clean, and manipulate datasets in SPSS or R

6. Identify and use basic data analysis and visualization tools to describe, conduct and interpret basic descriptive statistics such as central tendency and variance.

7. Describe statistical concepts such as the normal distribution, probability, sampling distributions, confidence intervals, and hypothesis testing

8. Conduct, Report, and Interpret inferential tests such as correlation, simple regression, and t-tests

9. Be proficient in identifying the limitations of specific methodologies and in understanding the relative merits of qualitative approaches to an identified research question

10. Be aware of qualitative analytical techniques such as content and thematic analysis

Example Assessment:

2. Critical Journal article review 2 based on analytic skills and interpretation. Assess all module Learning Outcomes.

Module 3: Foundations of Older Adult Mental Health

Description: This module aims to provide students with a comprehensive understanding of mental health frameworks, theories, and services, exploring how different disciplines contribute to the development of mental health approaches for older adults. Topics include multidimensional holistic health (incl. mental, physical, and social health); typical healthy and atypical ageing, lifestyle, social support and cognitive reserve; community-based mental health and primary care services; mental health interventions for older adults; and mental health conditions in older adults.

Credits: 10

Year: 1

Semester: 1

Competence Statement Number: C1, C2, C5, C7.

Example Module Learning Outcomes:

1. Demonstrate a comprehensive understanding of mental health frameworks, theories, and services as they pertain to older adults.
2. Evaluate the impact of typical and atypical ageing processes on older adult mental health, considering factors such as lifestyle, social support, and cognitive reserve, and apply this knowledge to develop holistic approaches for mental health promotion.
3. Analyse community-based mental health and primary care services for older adults, exploring the interdisciplinary contributions that various disciplines make to the development and implementation of effective mental health interventions within these settings.
4. Critically assess mental health conditions prevalent in older adults, demonstrating an in-depth understanding of their aetiology, symptomatology, and evidence-based interventions, and integrate this knowledge into the design and delivery of age-appropriate mental health care.

Example Assessment:

1. Scoping review of a topic of choice based on relevant mental health topics for typical healthy ageing or unhealthy ageing. Assess Module Learning Outcomes 1 and 2.

2. Case Study of a community-based or primary care service intervention for older adults with a specific focus on assessing, intervening and impacting positive mental health for older adults. Module Learning Outcomes 3 and 4.

****Module 4: Older Adult Wellbeing and Positive Psychology**

Description: This module aims to provide students with a deep understanding of frameworks, theories, and empirical research of psychological well-being in older adults; and the positive psychology of aging. Students will also learn about the major theories and research in the field of health and community psychology, positive psychology and the psychology of well, and ill-being. Students will also be introduced to the ways in which biopsychosocial processes can influence health, well-being and illness.

Credits: 10

Year: 1

Semester: 1

Competence Statement Number: C1, C2, C5, C7.

Example Module Learning Outcomes:

1. Critically consider theories and concepts of Wellbeing, and Positive Psychology.

2. Critically evaluate the theoretical and practical contribution of community psychology to psychology and well-being.

3. Formulate and justify psychological well-being strategies tailored specifically for older adults, drawing upon principles of positive psychology and evidence-based practices to enhance the overall mental health and quality of life in this population.

4. Synthesise and apply the theories and research from health and community psychology, considering the interplay of biopsychosocial processes in influencing the health, well-being, and illness of older adults, and demonstrate competence

in translating this knowledge into practical, culturally sensitive interventions within diverse communities.

Example Assessment:

1. Develop a position paper on a topic relevant to Wellbeing and Positive Psychology. Assess Module Learning Outcomes 1 and 3.
2. Complete a case study on a community based practice. Assess Module Learning Outcomes 2 and 4.

****Module 5: Research Clinic, Advanced Qualitative, Quantitative and Mixed Methodologies**

Description: This semester-long module will provide students with an understanding of advanced qualitative, quantitative and mixed research methodologies, designs and analytical techniques. A strong emphasis will be placed on developing and supporting statistical reasoning skills, including analytic competence, through laboratory experiments and computer-based practical sessions. Indicative content to include: univariate and factorial ANOVA, regression analysis, and multivariate analysis, their appropriate usage, how to compute them using SPSS or R statistical software, how to interpret them and how to report them in a manner consistent with standard reporting; qualitative analytical techniques such as content and thematic analysis, their appropriate use, interpretation and reporting; critically evaluate journal articles and other forms of research literature.

Credits: 10

Year: 1

Semester: 2

Competence Statement Number: Research Literacy and Digital Competencies

Example Module Learning Outcomes:

1. Critically discuss the principal research designs and methods used in psychological and cognate research and assess their strengths and limitations.

2. Demonstrate a systematic understanding of the principles of univariate and factorial ANOVA, regression analysis and multivariate analysis, and the ability to accurately carry out such analyses using SPSS or R and report statistical results in a manner consistent with standard report writing and which is appropriate to Masters standard.

3. Demonstrate the ability to conduct qualitative research in an appropriate manner and analyse, interpret and report data gathered using qualitative means in a manner consistent with standard report writing.

Example Assessment:

1. Develop a piece of qualitative research (focus group; interview; other) with a cohort of interest (older adult mental health) and design, implement and analyse according to Braun and Clarke key themes emerging. Assess module Learning Outcomes 1 and 3.

2. End of Semester online exam human invigilated based on a data-set and associated empirical paper. Assess module Learning Outcomes 1 and 2.

****Module 6: eHealth, eWell-being and Digital Therapeutics**

Description: This module aims to provide students with an advanced knowledge of technology in the context of health and well-being. Specifically, the student will broaden their knowledge of the role of disruptive technologies in supporting, monitoring, influencing, and predicting health and wellbeing outcomes for the older adult. Additionally, the student will be supported to create a digital artefact, such as a web page, application or digital tool related to older adult mental health.

Credits: 10

Year: 1

Semester: 2

Competence Statement Number: C8, C9, C10.

Example Module Learning Outcomes:

1. Evaluate and critically review causes and consequences of health and illness in the context of technology, emphasising the impact on older adults and their well-being.
2. Analyse and assess predictors of health behaviours, exploring how disruptive technologies can be utilised to bring about positive changes in health behaviours among older adults, considering factors such as monitoring, influencing, and predicting health outcomes.
3. Identify key factors surrounding technological innovations designed to facilitate health behaviour change and deliver effective health interventions, considering ethical implications and cultural sensitivity, especially within the older adult demographic.
4. Plan, execute, and critically evaluate client-oriented digital health technology applications, showcasing a comprehensive understanding of their usage and impact on mental health outcomes, particularly for older adults.
5. Apply advanced principles and best practices in developing eHealth interventions, culminating in the creation of a digital artefact (e.g., web page, application, or digital tool) focused on addressing and enhancing mental health outcomes for older adults, demonstrating proficiency in incorporating technology for the benefit of the ageing population.

Example Assessment:

1. Group Project using an e-portfolio to ideate, implement and analyse a proposed ehealth intervention with stakeholders, including a 1) literature review of the research in the area, 2) an evidenced rationale for the eHealth intervention 3) develop a digital artefact (e.g. web page, application or digital tool); 4) an evaluation of any ethical issues related to interventions of this kind 5) an

implementation and impact assessment plan of the effectiveness of the eHealth intervention. Assess all module outcomes.

****Module 7: Human Centred Design in Digital Mental Health****

Description: This module focuses on engaging older adults as end-users in the creation and participatory co-design of digital mental health interventions by adopting a human-centred design approach. Students learn techniques to motivate, support, and train older adults, considering their unique learning needs. Ethical considerations, trust, safety, and openness are integral components.

Credits: 10

Year: 1

Semester: 2

Competence Statement Number: C11, C12

Example Module Learning Outcomes:

1. Plan, implement, and critically evaluate processes related to the adoption, utilisation, and usability of available data and AI applications/solutions for older adult mental health service users.
2. Adhere to ethical principles (beneficence, nonmaleficence, autonomy, and justice), laws, and regulations governing e-mental health and wellbeing technology applications and solutions, ensuring that all actions align with the highest standards of ethical conduct and legal compliance.
3. Demonstrate mastery of person-centred principles in designing, implementing, and evaluating e-mental health interventions, emphasising collaboration within interprofessional teams to enhance intervention quality and effectiveness for the benefit of older adult service users.

4. Evaluate the adoption, utilisation, and usability of e-mental health and wellbeing applications, emphasising implementation processes that support a positive experience for older adult service users in a safe, cost-effective manner.

Example Assessment:

1. ePortfolio Project: Using a human-centred approach (e.g. co-design), plan, justify, implement and critically evaluate your chosen digital technology solution; critically consider ethical and legal regulatory issues within the European Union; and evaluate using an impact analysis of the intervention solution. This may take the form of a challenge based activity, such as a mini-hackathon or some other problem-based approach with older adults and other stakeholders, with prototype, implementation and impact analyses. Assess all module outcomes.

****Module 8: Person-centred e-Mental Health Skills**

Description: Developing effective interventions requires teamwork and collaboration. This module equips students with the skills to communicate and collaborate with diverse teams. It explores interdisciplinary approaches to developing impactful e-mental health interventions for older adults, emphasising effective communication and teamwork; a focus on health counselling interventions and communication skills to respond to the older adult patient, caregiver and family.

Credits: 5

Year: 2

Semester: 1

Competence Statement Number: C3, C4, C6, C8

Example Module Learning Outcomes:

1. Master principles of appropriate health counselling interventions to effectively respond to the diverse needs of older adults and their caregivers, showcasing a deep understanding of client-centred care and cultural sensitivity.

2. Synthesise a comprehensive understanding of evidence-based practices and client-centred care principles, demonstrating advanced proficiency in clinical decision-making to optimise health outcomes for older adults.

3. Apply advanced knowledge about mental illness stigma and its profound effects on healthy living and well-being among older adults, developing strategies to counteract stigma and enhance the overall mental health support for this population.

4. Master principles of person-centred e-mental health interventions, collaborating with interprofessional team members to enhance the quality and efficacy of interventions. Demonstrate a commitment to continuous improvement in the field of e-mental health for older adults, integrating evolving technologies and evidence-based practices into person-centred care.

Example Assessment:

1. Virtual Clinic - an interactive oral assessment based on a hypothetical patient case, where the assessor is the patient or caregiver or senior clinician, and the student adopts a role where interdisciplinary collaboration, planning and implementation of an effective e-mental health solution is the primary outcome. Assess all module outcomes.

****Module 9: Technology, Artificial Intelligence, Trust and Ethics****
Description: This module examines the key policy, trust and safety themes that core disruptive and innovative technology, including artificial intelligence stakeholders face throughout the lifecycle of current and future health technologies. Students will also gain insight into the function of industry/Community/NGO/Other teams - such as Trust and Safety, Legal and Policy, and Community Standards/Operations, and they will examine core issues faced by stakeholders (e.g. online harms, content moderation, and safety). Special topic focus will be given to older adult mental health technologies. Students will engage in solution-focused approaches to core trust, safety and policy issues by way of cutting-edge principles including safety-by-design and privacy-by-design.

Credits: 10

Year: 2

Semester: 1

Competence Statement Number: C9, C12

Example Module Learning Outcomes:

1. Critically identify key issues for technology and innovation relating to trust and safety, legal and policy issues
2. Identify and analyse the key roles of industry/Community/NGO/Other teams including: trust and safety, legal and policy, and community standards
3. Critically consider applications of psychological science within the domains of policy and safety
4. Understand the principles of safety-by-design, privacy-by-design, ethics-by-design and collaborative methodologies to innovatively address key debates within the policy and safety space, especially for eMental Health

Example Assessment:

1. Students will: 1) identify a key policy framework relating to trust and safety issues (e.g. an EU or government strategy); 2) critically evaluate its applications within e Mental Health; and 3) consider how safety-by-design principles could be applied to e Mental Health solutions. Assess all module learning outcomes.

****Module 10: Applied Research Thesis and Ethics****
Description: This module is intended to provide students with experience of conducting an independent research study and producing a written report at postgraduate level. Through a series of online clinics, online workshops and supported content, students will

be instructed on how to conduct their research in an ethical and professional manner under the supervision of an academic faculty member, and on how to present their research ideas in an appropriate academic style. As part of the research cycle, students will be required to identify an important research question at the forefront of the field of eMental Health and Well-being for older adults; design an appropriate study to address that research question; carry out the study in an ethical and professional manner, adopt appropriate methods to capture, analyse and report on data collected; develop a manuscript that reports on the study and a sample letter to the target journal editor.

Credits: 30

Year: 2 Note: Year 1 DIAK

Semester: 1 and 2 Note: Semesters 1, 2 and 3 DIAK

Competence Statement Number: Research Literacy and Digital Competencies

Example Module Learning Outcomes:

1. Design and plan a research project and manage the time involved to complete the project, and related report, within given time constraints
2. Source, read and critically evaluate the primary literature on the chosen topic
3. Ideate a relevant research question, justify and use an appropriate methodology in addressing the proposed research question or aim
4. Consider ethical, data protection and professional issues that might affect the study and design a methodology that satisfies ethical and professional standards of research.
5. Collect and handle/store/process data as appropriate.
6. Critically analyse, interpret and draw conclusions from the research findings in the context of the literature in the area.
7. Communicate results in a clear, concise and scholarly manner by means of a formal written manuscript that follows the accepted conventions of the discipline target journal.

Example Assessment:

2. Students will develop a research proposal and submit for ethical review (20%), and complete a formally structured manuscript reporting on the findings of their primary

or secondary data analysis, which will be prepared to follow the conventions of the discipline and satisfy the submission requirements of a target peer-reviewed journal (80%). Assess all module learning outcomes.

Option Elective Modules

[A] Technology Pathway

****Module 11: Innovation, Disruption and Sustainability in eMental Health****
Description: The World Health Organisation (WHO) has acknowledged that there can be 'no health or sustainable development without mental health'. More needs to be done to achieve the United Nations (UN) Sustainability Development Goal or SDG 3 of 'promot[ing] well-being for all at all ages'. This module explores sustainability and sustainable behaviour in the context of innovation and technology. The main aims are to understand the critical importance of 1)mental health, wellbeing and sustainability, 2) of innovating and designing for sustainability 3) of increasing knowledge and awareness of sustainability as well as 4) key drivers and facilitators of sustainable behaviour. This will be done through the backdrop of innovation in psychology and technological sciences using case studies and practical learning activities. Credits: 5 Year: 2 Semester: 2 Additional Competencies Example Module Learning Outcomes: 1. Critically understand the key challenges of sustainability, sustainable transitions, and innovation and design for sustainability 2. Critically consider the role of policy, public bodies, industry, NGOs and civil society in increasing sustainability 3. Identify and analyse key factors influencing both knowledge of sustainability and sustainable behaviours 4. Plan and appraise a sustainable development/design project Example Assessment:

1. Group Oral pitch based on an interdisciplinary group project, and individual report. Project will focus on evidence-based design of a sustainable development intervention for a specified older adult population on a mental health and wellbeing sustainability target. Assess all module learning outcomes.

****Module 12: Topics in Innovative and Disruptive Technology in eMental Health****

Description: The purpose of this module is to provide an overview of the various innovative technologies in e Mental Health and Wellbeing. There will be online seminars on innovative technologies at the forefront of research, with masterclasses and guest lectures from invited international researchers and industry. Students are expected to participate in a variety of innovative teaching approaches and activities throughout the semester and will apply knowledge gained in a variety of formats. Students will integrate their knowledge in a team-based design challenge.

Credits: 5

Year: 2

Semester: 2

Additional Competencies

Example Module Learning Outcomes:

1. Evaluate the societal, personal and psychological impacts of innovative and disruptive technologies.
2. Develop an artefact that demonstrates an understanding of innovative and disruptive technologies.

Example Assessment:

1. Digital Project and Reflective Journal: This assessment will involve evaluating the societal, personal, psychological and Sustainable Development Goal-related impacts of innovative and disruptive technologies. Assess all module Learning Outcomes.

Module 3: e Journal Club: Human and Societal Enhancement

Description: Virtual Journal Clubs are attended by researchers, by external collaborators and stakeholders and also by industry-relevant partners (guest speakers) around a common research theme based on Older Adult digital mental health and wellbeing. All principal members of the club are expected to select research articles of interest and to present them to the club members. The aim of the module is to advance critical analytical and transversal digital literacy skills when considering empirical research at the forefront of Human and Societal Enhancement, using cognitive technologies, social robotics, mixed reality, Human Computer Interface and other disruptive innovations. This is achieved by giving students the opportunity to advance their knowledge of a research theme in a participatory e-journal club setting. Research articles to be critically presented should be read and carefully considered in advance of the meeting. Assessment will focus on science communication skills such as interview and podcast skills, as well as feature writing. Participation in the e-journal club, to include meetings attended and journal article critiques presented by the student and other club members will be tracked. A reflective journal as part of the club e-portfolio should be maintained by the student to record the student's learning experience on this module. Interviews, Podcasts and Short Features can be posted on the e-portfolio and shared with peers for feedback.

Credits: 5

Year: 2

Semester: 2

Additional Competencies

Example Module Learning Outcomes:

1. Critically discuss and analyse journal articles to club members
2. Interview one key author from a journal article of interest, and another researcher in the same field that can comment on the impact of that article in her/his own work.
3. Develop a podcast based on the article interview and post to eportfolio.
4. Develop a short feature based on the article interview of publishable quality and post to eportfolio.

5. Reflect on participation in the club and post to eportfolio.
6. Collaborate with other club members by providing peer feedback on their eportfolio.

Example Assessment:

1. E-journal club participation and reflective journal including X (formerly twitter) feed (30%); Critical review and interview with researchers at forefront of field (60%), Podcast (40%) and short Feature (20%) based on Interview, Eportfolio Peer assessment (10%). Assess all module learning outcomes.

****Module 4: Introduction to Machine Learning and Data Analytics****

Description: The purpose of this module is to provide an overview of the tools, techniques and purpose of machine learning. Students will participate in a variety of innovative teaching activities to distinguish approaches and supervised and unsupervised methodologies within machine learning. In addition, they will evaluate the effects and implications of machine learning on sustainability and society and the role of explainable-AI on ML adoption.

Credits: 5

Year: 2

Semester: 2

Additional Competencies

Example Module Learning Outcomes:

1. Explain the purpose and key applications of Machine Learning.
2. Distinguish between supervised and unsupervised Machine Learning methods and when and how to apply them.
3. Apply the concepts and application of machine learning and artificial intelligence in online learning and large data set applications.
4. Apply and synthesise the characteristics of different methods of machine learning
5. Investigate the use of training/test data sets

6. Apply the Cross Industry Standard Process for Data Mining - Crisp-dm framework ML lifecycle Overarching process - iterative process
7. Analyse the potential impact of machine learning in the context of sustainability
8. Analyse the difference between ML research and real-world analysis needs

Example Assessment:

1. This assessment requires students to present on the societal benefits of machine learning with an emphasis on the ethical implications of machine learning and potential impact of machine learning in the context of sustainability. Assess module Learning Outcomes 7 and 8
2. This will be an interactive oral exam where students discuss an artefact on method selection and experimental design. Assess module Learning Outcomes 1,2,3,4,5,6,8.
3. End of semester online exam 1,2,3,4,5,6,7,8 (worth 40%)

[B] eHealth Pathway

****Module 5: Community and Inclusive Mental Health Practices***
Description: This module explores community-focused and inclusive practices in mental health. Students will learn to challenge stigma, adopting a person-centred approach that values the unique experiences, preferences, and strengths of individuals, families, and communities. Credits: 5 Year: 2 Semester: 2 Additional Competencies Example Module Learning Outcomes: 1. Demonstrate understanding of underpinning philosophies of psychology, sociology and community development in relation to self and group systems

2. Be able to analyse person-centred approaches to engaging older adult patients, their families and communities as part of their mental health journey

3. Critically consider the concept of mental health stigma, as applied to older adult mental health, and how to mitigate

4. Develop leadership and communication skills in mental health promotion and good practice

Example Assessment:

1. Reflective -portfolio and Video: Each student will create a two minute audio visual presentation that gives their peers an understanding of how they have been engaging with an older adult digital community group in meaningfully helping them achieve their mental health objectives. Informed consent will be required where any community group representatives are displayed in the presentations.

****Module 6: Psychosocial Dynamics and Therapeutic Approaches in the Virtual Clinic***

Description: The purpose of this module is to critically introduce students to theoretical and practice perspectives at the forefront of the psychology of counselling and psychotherapy for the virtual clinic. In this module, students will develop advanced knowledge of the origins and growth of counselling and psychotherapy theory and practice drawing on the central tenets of psychodynamic, cognitive-behavioural, humanistic and systemic approaches. Students will develop a critical awareness of the process of counselling and psychotherapy; an appreciation of the core characteristics associated with effective psychotherapy; and the factors associated with establishing a good therapeutic relationship. Students will also focus on acknowledging unconscious stigmatising attitudes, fostering hopeful and motivating attitudes, and treating older adults with mental health problems with dignity and empathy.

Credits: 5

Year: 2

Semester: 2

Additional Competencies

Example Module Learning Outcomes:

1. Demonstrate a critical understanding of the theoretical underpinnings at the forefront of contemporary counselling and psychotherapy, and as applied to the virtual clinic.
2. Critically review the philosophical positions and application of major psychological approaches to mental health difficulties, especially for older adults (psychodynamic, cognitive- behavioural, humanistic and systemic).
3. Analyse and critically examine the core characteristics associated with an effective psychotherapy from the humanistic (person –centred) approach
4. Demonstrate competence of basic psychosocial and counselling skills relevant to establishing a good therapeutic relationship in the virtual clinic.

Example Assessment:

1. Authentic Interactive Oral with role play (therapist/patient) in the virtual clinic. Assess all module learning outcomes.

****Module 7: Digital Citizenship***

Description: This module uses blended immersive learning opportunities to introduce students to the importance of a community psychology approach to promoting community empowerment, equality, equity and social justice, especially for older adults. Students will evaluate models and concepts of individual, community and global digital citizenship as a disruptive innovation. They will examine the legislative and social justice frameworks underpinning digital citizenship.

Credits: 5

Year: 2

Semester: 2

Additional Competencies

Example Module Learning Outcomes:

1. Describe and evaluate the theoretical and practical contribution of community psychology to digital wellbeing

2. Identify and evaluate the models of digital citizenship and related concepts
3. Demonstrate critical awareness of the ways in which individual and community digital citizenship are linked to contemporary culture, society and economy.
4. Demonstrate the ability to integrate ideas, knowledge, concepts and understanding of community psychology, digital citizenship and social enterprise in addressing a real-world challenge focusing on sustainable development and mental health and wellbeing.

Example Assessment:

1. Students will create, in their groups, a digital presentation that identifies the problem highlighted in their group project, the solution proposed by the group and the rationale for this choice. Assess all module learning outcomes.

****Module 8: Law, AI, Cognitive Technologies and Robotics***

Description: The aims of this module are to provide an overview of the legal issues to be considered with emerging and disruptive technologies in the fields of cognitive technologies, artificial intelligence and robotics. Particular emphasis will be paid on the use of human behaviour and brain imaging data in cognitive technologies, and legal implications, including European law, of current and possible uses. Also, social robotics will be critically considered from a legal perspective.

Credits: 5

Year: 2

Semester: 2

Additional Competencies

Example Module Learning Outcomes:

1. Describe and evaluate fundamental concepts in AI and Social Robotics
2. Demonstrate a detailed and systematic knowledge of key legal challenges, sources of law and proposed law reform relevant to AI and Social Robotics

3. Demonstrate innovative solutions to legal challenges relevant to AI and Social Robotics

4. Critically consider future uses in AI and Social Robotics

Example Assessment:

1. Case Study on a cognitive technology (Artificial) with critical consideration of legal challenges and present solutions. Worth 40%.

2. Interactive Oral Presentation 30%) and Written Report (30%) based on fictitious legal cases based on Social Robotics. Assess all Module Learning Outcomes.

5 Expert Feedback on Curriculum Structure and Final Conclusions

The DCU Teaching Enhancement Unit produced a comprehensive evaluation of the curriculum structure, as well as documenting the workshops 1-4 on Persona and Programme Learning Outcome activities, and made a series of recommendations, in line with best practice design principles (see WP 3.1 Curriculum Design).

Key recommendations included:

- Reframing learning outcomes in plain language and ensuring a strict module to programme learning outcome matrix is in place
- Build in evaluation points for suggested assessment in terms of outcomes assessed, assessment load by module, and whether assessment is formative or summative
- Build in evaluation of pedagogical frameworks that inform learning design and review as part of implementation.
- The WP 3.2 report highlights the importance of a collaborative and evidence-based approach to curriculum design in the eMEBE program. The integration of stakeholder feedback through the Student Persona method and the establishment of clear Programme Learning Outcomes ensure that the curriculum is both relevant and responsive to the needs of students and the industry. The development of a comprehensive Assessment Map further strengthens the curriculum by aligning assessments with learning outcomes, promoting a meaningful learning experience.

Moving forward, the insights gained from the persona profiling and programme learning outcome workshops will be instrumental in refining the curriculum and ensuring its successful implementation. The emphasis on authentic assessments and interdisciplinary collaboration will prepare graduates to effectively address the challenges in the field of e-mental health for older adults, ultimately contributing to improved mental health outcomes in this population. Ongoing evaluation and adaptation of the curriculum will be essential to maintain its relevance and effectiveness in a rapidly changing educational landscape.

References

(Editor), B. B. (1956). *Taxonomy of Educational Objectives: The Classification of Educational Goals. Handbook 1: Cognitive Domain.* 1st Ed. New York, NY: David McKay Co, Inc. 201 .

Braun, V. &. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, 3(2), 77-101.

Esempio, E. G. (2024). Community Psychology Competencies and Onlife Participatory Team Building: The 9th Conference of Community Psychology (9ICCP) Case Study. *Journal of Community & Applied Social Psychology*, 34(6), e70006.

Grant, J. (2018). Principles of curriculum design. Understanding medical education: Evidence, theory, and practice.

Kokol, P. (2022). Agile software development in healthcare: a synthetic scoping review. *Applied Sciences*, 12(19), 9462.

Laurillard, D. (2012). *Teaching as a design science: building pedagogical patterns for learning and technology.* London: Routledge.

Mendoza, W. R. (2022). Assessment of curriculum design by learning outcomes (LO). *Education Sciences,*, 12(8), 541.

Muangkaew, K. S. (2022). Development of humanistic counseling competencies for social justice, congruence of psychology students as a mediator variable. *Cogent Psychology*, 9(1), 2079192.

Papageorgi, I. F. (2024). Skills and Competencies Gained From a Psychology Bachelor's Degree: European Graduates' Perspectives. . *Psychology Learning & Teaching*, 23(1).

Shahid, S. (2024). Complex Challenges and Multidisciplinary Solutions: A Strategic Approach. *Physical Education, Health and Social Sciences*, 2(03), 50-63.

Zagallo P, M. J.-L. (2019). Trhough the eyes of faculty: Using personas as a tool for learner-centered professional development. *CBE - Life Sciences Education*, 18(4), ar62.