



MICRO-credentials for life-long learning and employability:
**Building Capacities for Developing Agile Educational
Interventions in Southeast Asian Universities**

Grant Agreement no.: 101081924

Deliverable D3.1
Co-Designing Micro-Courses for Better Employability

Project details

Grant Agreement No.:101081924

Deliverable: D3.1

Project Start Date: 01.03.2023

Duration: 36 months

Coordinator: Universität des Saarlandes, Germany

Deliverable information

Work Package	WP3
Deliverable Number	D3.1
Title	Co-Designing Micro-Courses for Better Employability
Lead Beneficiary	UNIMAS & USM
Due Date	February 28 th , 2025
Submission Date	February 28 th , 2025
Lead Author(s)	UNIMAS, USM
Contributors(s)	All SEA Partners
Reviewer(s)	UER
Dissemination Level*	PU - Public
Status	Final

**Dissemination Levels*

PU = fully open (automatically posted online on the Project Results platforms)

Sensitive — limited under the conditions of the Grant Agreement

EU classified — RESTREINT-UE/EU-RESTRICTED, CONFIDENTIEL-UE/EU-CONFIDENTIAL, SECRET-UE/EU-SECRET under Decision 2015/444

Document history:

Version	Date	Author	Comment
1.0	03/12/2024	UNIMAS	Uploaded by USM
2.0	03/02/2025	UNIMAS	Added Executive Summary to report
3.0	17/02/2025	UNIMAS	Addressed all comments from reviewers and improve formatting.

Quality Control:

	Who	Date	Comment
Checked by internal reviewer	UER	21/02/2025	Add comments emphasising the impact and importance of the initiative

Checked by Project Coordinator	USAAR	3/12/2024	Some streamlining, questions of clarifications, and recommendations
Final check by Project Coordinator	USAAR	25/02/2024	All recommendations have been considered; excellent & useful report on Micro-courses designs

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Acknowledgements

MICROCASA is a project that has received funding from the European Union's ERASMUS-EDU-2022-CBHE programme under Grant Agreement No 101081924. Please see www.microcasa.eu for more information. The partners in the project are Universitaet des Saarlandes, Universidad Carlos III de Madrid, Università Degli Studi Europea, Associazione CIMEA, GIRAF PM e.K., Universiti Sains Malaysia, Universiti Malaysia Sarawak, Universitas Brawijaya, Universitas Sam Ratulangi, University of the Philippines System and Ateneo de Manila University. The content of this document is the result of the worked developed by the partners in the context of the project.

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Executive Summary

The MICROCASA project, funded by the European Union under the ERASMUS program, seeks to enhance lifelong learning and employability in Southeast Asia through innovative micro-credential courses. This initiative focuses on addressing the dynamic needs of learners and industries by developing flexible, competency-based educational units. Work Package 3.1 (WP3.1) plays a pivotal role by co-designing micro-credentials that align with both local and global standards, fostering impactful education solutions.

The objectives of Work Package 3.1 focus on fostering collaboration between European and Southeast Asian (SEA) partners to co-design micro-credential courses that address critical skill gaps and enhance lifelong learning opportunities. This partnership leverages the expertise of European partners in international competency frameworks, such as DigComp 2.2, and the local knowledge of SEA partners to ensure the courses are both globally relevant and regionally contextualized. Through this collaborative effort, the work package aims to create detailed course designs that support employability, community engagement, and professional upskilling while ensuring the alignment of educational content with global standards and regional priorities.

The methodology adopted for the co-design of micro-credentials involved identifying specific learning needs, engaging diverse stakeholders, and leveraging tools like CoDe-Graph for visualizing learning paths and course structures. This iterative process included workshops, surveys, and stakeholder feedback to ensure relevance, practicality, and alignment with global standards. The use of hybrid delivery models and the integration of national guidelines enhanced both accessibility and adaptability.

The courses developed under WP3.1 include tracks on community engagement, problem-solving using TRIZ, internet routing, and healthcare management. These courses, which will be implemented across Malaysia, Indonesia, and the Philippines, are tailored to address local challenges while adhering to international frameworks. Each course emphasizes actionable learning outcomes, practical applications, and hybrid delivery modes to cater to diverse audiences.

The primary outcome of Work Package 3.1 is a comprehensive design details for a range of micro-credential courses. While the courses themselves have not yet been developed, this work package has established detailed blueprints for each course, including clearly defined learning objectives, content structures, delivery methods, and assessment strategies. These design details ensure that the courses are aligned with both local needs and international frameworks, such as DigComp 2.2, while remaining adaptable for hybrid learning environments. The outcome from this stage establishes a foundational framework for subsequent course development stages, ensuring the courses are well-structured, relevant and capable of addressing critical skill gaps effectively.

In conclusion, Work Package 3.1 is a critical step in the MICROCASA project, as it lays the groundwork for the successful development of impactful micro-credential courses. Through a structured and collaborative co-design process, this work package ensures that each course is meticulously planned to address specific skill gaps, align with international competency frameworks, and meet local and regional needs. The design details developed during this phase provide a comprehensive blueprint for content creation, delivery modes, and assessment strategies, which are essential for ensuring the courses are relevant, practical, and effective. By engaging stakeholders, utilizing innovative tools, and adhering to global standards, WP3.1 ensures the courses are well-positioned to enhance employability and support lifelong learning once fully developed. This step is vital for maintaining the quality, scalability, and adaptability of the courses, enabling them to achieve their intended impact.

1. Introduction

The MICROCASA project represents an innovative approach to reimagining education and skills development through the integration of micro-credential courses. This initiative, spearheaded under Work Package 3 (WP3): Pilot Courses Development, aims to address the evolving needs of learners and industries by offering flexible, competency-based educational units. Work package 3.1 (WP 3.1) focuses specifically on the collaborative co-design of micro-credential courses, leveraging both local expertise and experience, as well as guidance from European partners, to ensure global relevance and adaptability.

1.1. Objectives of Work Package 3

The overarching goal of WP3 is to design, develop, and implement pilot micro-credential courses that:

- Address critical skill gaps in targeted sectors, such as community engagement, healthcare, and technology.
- Align with international competency frameworks, particularly DigComp 2.2¹, to standardize learning outcomes and competencies.
- Foster lifelong learning and upskilling opportunities for diverse target audiences, including university students, professionals, and community members.
- Serve as good examples of instructional designs of microlearning leading to microcredential.

1.2. Purpose of Micro-credential Courses

Micro-credential courses are short, targeted educational units designed to equip learners with specific knowledge and skills in a condensed timeframe. These courses emphasize:

- Flexibility: Offering hybrid (online and in-person) learning modes to accommodate diverse learner needs.
- Relevance: Addressing real-world challenges and providing practical and actionable solutions.
- Recognition: Granting certifications that are recognized by both academic institutions and industry.
- Assessment: Acknowledging and building on existing competencies to create personalized learning paths.

1.3. Scope of Package WP 3.1

The scope of WP 3.1 encompasses:

- The co-design of micro-credential courses across participating institutions in Malaysia, Indonesia, and the Philippines, with collaboration from EU partners.
- Collaboration between stakeholders, including educators, industry professionals, and potential learners, to ensure course content meets practical and theoretical requirements.
- Utilization of innovative tools, such as the DigComp 2.2 framework for competency alignment and Mermaid-based CoDe-Graph for visualizing learning paths.
- Reference to each country's standard agency for quality control and monitoring.

¹ DigComp 2.2 <https://publications.jrc.ec.europa.eu/repository/handle/JRC128415>

1.4. Relevance in Modern Education

The integration of digital technologies and evolving workplace demands have driven a shift towards micro-learning models. The following are several justifications for microcredentialial approach:

- Validate just-in-time competencies for rapidly changing industries.
- Support the reskilling and upskilling of workers in alignment with global trends, such as the Fourth Industrial Revolution.
- Enhance employability and community development through targeted, impactful education.

1.5. Report Structure

This report documents the outcomes of WP 3.1, detailing the co-design process, course specifications, methodologies employed, and the expected impact of the developed micro-credentials. The subsequent sections provide an in-depth analysis of:

- The collaborative design workflow.
- Course details and specifications.
- Innovative approaches and tools.
- Challenges, solutions, and recommendations for future developments.

2. Methodology

The co-design process for micro-credential courses under WP 3.1 employed a systematic, iterative approach to ensure the courses addressed critical skills gaps while aligning with international standards and stakeholder needs. The methodology was designed to emphasize collaboration, transparency, and adaptability building on the CoDe-Graph approach (Kolling, Weinberger, & Niegemann, 2022). A key focus was adapting CoDe-Graph for designing Micro-Learning and -Credentials towards machine-readability and addressing specifics of microcredentialial course design, which provided a structured framework for the course design process. These graphs served as blueprints for course content, delivery modes, and assessment strategies, which then visualized using tools such as Mermaid for clarity and refinement. Figure 1 shows the step by step methodology for the co-design process.

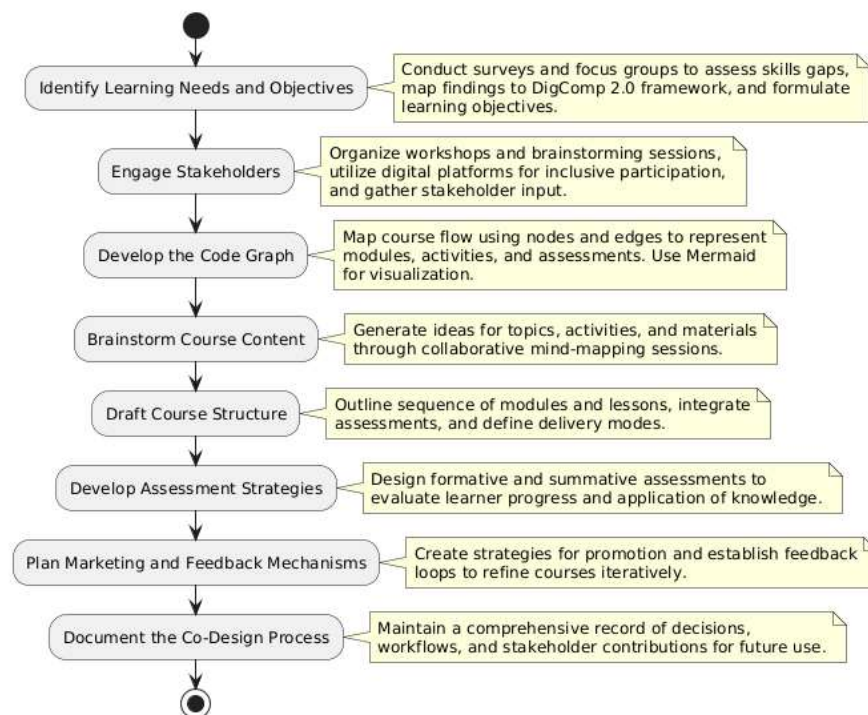


Figure 1: WP3.1 Step-by-Step Methodology for Co-Design Process

2.1. Identifying Learning Needs and Objectives

This initial step was pivotal in ensuring the relevance and effectiveness of the courses. By identifying the target audience's specific skills gaps and educational requirements, the co-design process laid a solid foundation for the course structure. Activities included:

- Conducting **surveys and focus groups** with learners, industry representatives, and academic experts to gather qualitative and quantitative data on skill needs.
- Mapping the findings to the **DigComp 2.2 framework**, ensuring that the courses aligned with internationally recognized digital competencies.
- Setting clear learning objectives for each course to address the identified gaps comprehensively.

The output for this step is a detailed list of learning objectives and required competencies tailored to the target audience, ensuring each course is focused on bridging specific skills gaps and enhancing learner outcomes.

2.2. Engaging Stakeholders

Engaging diverse stakeholders ensured that the courses incorporated varied perspectives, enhancing their relevance and practicality. This phase focused on:

- **Workshops and brainstorming sessions:** Educators, industry professionals, and community representatives collaborated to define course scope and content.
- Leveraging **digital collaboration tools** to facilitate input from geographically dispersed stakeholders.
- Establishing a feedback loop that allow stakeholders to review and refine the proposed course objectives and content.

The output for this step is a consensus on the scope, priorities, and focus of the courses, incorporating diverse perspectives to create a well-rounded curriculum.

2.3. Further Developing CoDe-Graph for Microcredential Courses

The creation of CoDe-Graph is an additional feature of the co-design methodology. CoDe-Graph structures the learning pathways, linking key course components such as modules, lessons, activities, and assessments in a logical, sequential manner. Aiming for simplicity in grammar and components of this graphical language, it fosters quick understanding of stakeholders with heterogeneous backgrounds as it is intentionally developed to support co-design.

Key Features of CoDe-Graph:

1. **Modular Design:** Each module was represented as a node, with edges depicting the flow between modules based on prerequisites or dependencies.
2. **Assessment Integration:** Nodes for formative and summative assessments were strategically placed to evaluate learner progress and reinforce critical skills.
3. **Feedback Loops:** Feedback mechanisms were embedded within the graph, ensuring iterative improvements based on learner performance and input.
4. **Flexibility:** CoDe-Graph allowed for dynamic adjustments to accommodate changes in objectives, stakeholder feedback, or delivery modes.

CoDe-Graph was subsequently visualized using **Mermaid**², a tool that transformed the structured text into an interactive flowchart. Figure 2 shows an example of CoDe-Graph created using Mermaid markdown language for microcredential courses. While Mermaid was not the core focus, it enabled stakeholders to visually interpret and refine the course design effectively.

² <https://mermaid.js.org/intro/>

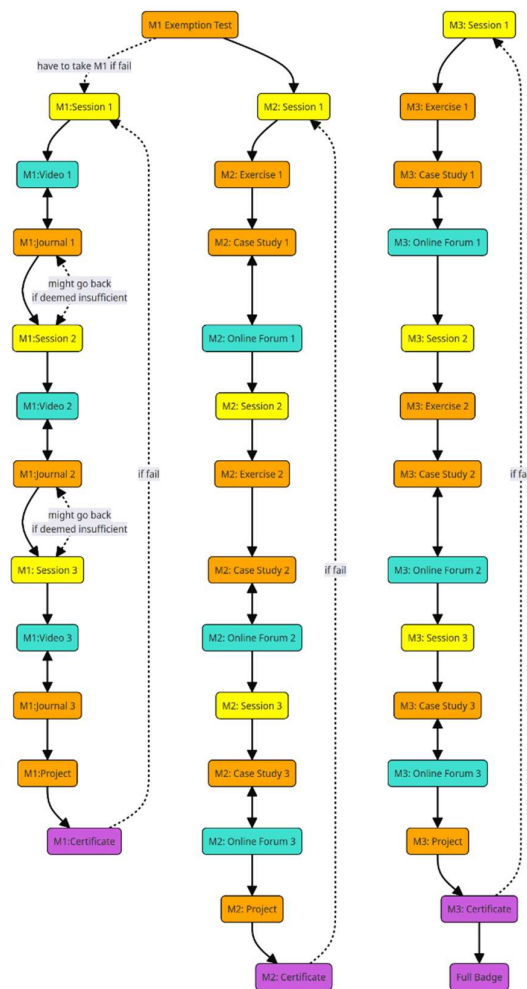


Figure 2: Example of CoDe-Graph created for microcredential courses

The output for this step is a comprehensive and adaptable graph for each course, providing a structured framework that serves as a blueprint for content development and delivery.

2.4. Brainstorming Course Content

In this phase, the co-design team built upon the framework established in CoDe-Graph to develop comprehensive course content. Key activities included:

- Conducting **mind-mapping sessions** to explore topics, materials, and activities that aligned with the course objectives.
- Refining content through iterative reviews to ensure consistency with the competencies outlined in CoDe-Graph.
- Incorporating real-world scenarios and case studies to enhance practical applicability.

The output for this step is a detailed list of topics, activities, and learning materials, ensuring the courses are engaging, relevant, and aligned with learner needs.

2.5. Drafting the Course Structure

Using CoDe-Graph as a guide, the team developed detailed outlines for each course, including:

- The sequence of modules and lessons.
- The integration of assessments at appropriate intervals.
- The allocation of hybrid delivery modes to maximize accessibility and engagement.

The output for this step is a finalized course outline that clearly defines the structure and flow of learning activities, assessments, and feedback mechanisms.

2.6. Developing Assessment Strategies

Assessments were designed to align with the learning objectives and evaluate both knowledge acquisition and practical application. These included:

- **Formative Assessments:** Embedded within modules to provide immediate feedback and reinforce learning.
- **Summative Assessments:** Culminating evaluations to measure overall mastery of course objectives.

Please refer to Appendix A for detail formative and summative for each microcredential courses from each SEA partner country. Additionally, there will be project level evaluation strategy in WP4. The output for this step is a robust assessment strategy integrated into the course structure, ensuring meaningful evaluation of learner progress and outcomes.

2.7. Planning Marketing and Feedback Mechanisms

To ensure successful implementation and continuous improvement, the team will develop marketing (WP3.3) and feedback (WP4) strategies for:

- Marketing courses to target audiences through digital channels such as social media and educational platforms.
- Gathering iterative feedback from learners and employers to refine course content and delivery.
- Feedback is also gathered through individual microcredential course feedback mechanism which is after the course has been delivered.

The output for this step is a comprehensive marketing and feedback plan, ensuring wide reach and iterative refinement of the courses based on stakeholder input.

2.8. Documenting the Co-Design Process

Finally, each stage of the Co-Designed process was documented to ensure transparency and serve as a reference for future course development initiatives.

The output for this step is a detailed record of the Co-Design process, capturing key decisions, stakeholders' contributions, and results. This documentation supports scalability and replication in future projects.

3. Course Specifications

The finalized micro-credential courses were carefully designed and structured to meet the diverse needs of learners across different countries and institutions. These courses, developed collaboratively, reflect a strong focus on specific competencies and practical applications while aligning with the overarching goals of the MICROCASA project. This section provides an overview of the finalized courses, organized by country and institution, along with details of their objectives, learning outcomes, mode of delivery, and duration.

3.1. Overview of the Finalized Courses by Country and Institution

The courses were developed by partner universities in Malaysia, Indonesia, and the Philippines, each addressing distinct educational needs relevant to their local contexts. This collaborative approach ensured that each course was tailored to its intended audience while maintaining consistency with global standards.

- **Malaysia:**
 - **UNIMAS (Universiti Malaysia Sarawak):** Focused on community engagement and innovative problem-solving using TRIZ methodologies.
 - **USM (Universiti Sains Malaysia):** Emphasized holistic caregiving for stroke survivors.
- **Indonesia:**
 - **Universitas Brawijaya (UB):** Delivered technical knowledge on internet routing, covering intra-domain and inter-domain routing.
 - **UNSRAT (Universitas Sam Ratulangi):** Prepared students for employment through work-readiness programs.
- **Philippines:**
 - **UPOU (University of the Philippines Open University):** Addressed lifestyle diseases with a focus on diabetes and hypertension.
 - **ADMU (Ateneo de Manila University):** Courses under this institution were focused on advanced skills development.

The output for this section is a comprehensive listing of courses, categorized by institution and country, showcasing the collaborative efforts of all partners.

3.2. Course Tracks and Modules

Each institution developed courses organized into specific tracks, consisting of individual modules that collectively addressed the overarching goals of the track.

Table 1: Summary of Micro credential Courses for each Country

Institution	Track	Modules
UNIMAS (Malaysia)	Track 1: Community Engagement	<ul style="list-style-type: none"> • Module 1: Understanding Your Community • Module 2: Community Protocol • Module 3: People-Centered Approach
	Track 2: TRIZ Problem Solving	<ul style="list-style-type: none"> • Module 1: Systematic Inventive Problem Solving Using TRIZ • Module 2: Problem Analysis and Solving Tools Using TRIZ • Module 3: Community-Based Problem Solving Using TRIZ
USM (Malaysia)	Track: Holistic Caregiving	<ul style="list-style-type: none"> • Module 1: Comprehensive Care for Stroke Survivors: A Holistic Approach
UB (Indonesia)	Track: Internet Routing	<ul style="list-style-type: none"> • Module 1: Understanding Routing on the Internet • Module 2: Intra-Domain Routing

		<ul style="list-style-type: none"> Module 3: Inter-Domain Routing
UNSRAT (Indonesia)	Track: Work-Ready Skills	Work-Ready! Pre-Employment Micro Course for Undergraduates and Fresh Graduates Topic 1: Building Essential Skills for Employment Topic 2: Excelling in the Job Application Process
UPOU and ADMU (join courses) (Philippines)	Track: Lifestyle Diseases	1. Digital Workplace Competency Training (DWCT) 2. Foundations of Lifestyle Diseases Management 3. Lifestyle Interventions in Disease Management 4. Patient-Centered Care and Holistic Approach

The output for this section is a detailed mapping of course tracks and modules, highlighting their thematic focus and structure, which ensures logical progression for learners.

3.3. Summarized Course Objectives, Learning Outcomes, Mode of Delivery, and Duration

Each course was designed with clearly defined objectives and learning outcomes, ensuring that learners gained actionable knowledge and skills by the end of the program.

- **UNIMAS:**
 - **Track 1: Community Engagement**
 - **Objectives:** Equip learners with strategic leadership skills, participatory approaches, and innovative thinking for community development.
 - **Outcomes:** Learners will design inclusive community projects and apply participatory development approaches.
 - **Mode of Delivery:** Hybrid (face-to-face and online).
 - **Duration:** 2 weeks per module.
 - **Track 2: TRIZ Problem Solving**
 - **Objectives:** Introduce TRIZ methodologies for systematic innovation and problem-solving.
 - **Outcomes:** Learners will apply inventive principles to solve real-world challenges.
 - **Mode of Delivery:** Hybrid.
 - **Duration:** 2 weeks per module.
- **USM:**
 - **Course:** Comprehensive Care for Stroke Survivors
 - **Objectives:** Provide practical strategies for caregiving and promoting well-being.
 - **Outcomes:** Caregivers will demonstrate holistic care and support for stroke survivors.
 - **Mode of Delivery:** Hybrid.
 - **Duration:** 4 weeks.
- **UNSRAT:**
 - **Course:** Work-Ready! Pre-Employment Micro Course for Undergraduates and Fresh Graduates

- **Objectives:** Equips participants with key employability skills, effective communication, interview strategies, and a professional mindset to enhance job readiness
- **Outcomes:** Participants will be able to communicate effectively in professional settings, craft tailored resumes and cover letters, utilize job search strategies, present confidently in interviews, and apply workplace etiquette
- **Mode of Delivery:** Online self-paced
- **Duration:** 17-24 hours (Approx. 2 weeks)
- **UB:**
 - **Track:** Internet Routing
 - **Objectives:** Teach foundational and advanced routing concepts, including BGP and dynamic routing protocols.
 - **Outcomes:** Learners will configure and troubleshoot routing scenarios.
 - **Mode of Delivery:** Online with practical labs.
 - **Duration:** 3 weeks per module.
- **UPOU and ADMU:**
 - **Course:** Lifestyle Diseases
 - **Objectives:** Equip healthcare professionals with strategies for lifestyle disease prevention and management.
 - **Outcomes:** Learners will design and implement personalized care plans.
 - **Mode of Delivery:** Online, self-paced.
 - **Duration:** 4 weeks.

The output for this section is a detailed summary of course objectives, outcomes, delivery methods, and durations, showcasing the depth and variety of the finalized micro-credential programs.

4. Innovations and Tools

The course co-design process integrated innovative tools and methodologies to ensure the development of high-quality, practical, and relevant micro-credential courses. Each participating country leveraged its own guidelines and frameworks for micro-credential course development, while also incorporating advanced tools for visualization and delivery.

4.1. Usage of National Microcredential Guidelines

Each country adopted its respective guidelines for designing micro-credential courses to align with local education and industry needs. These national frameworks ensured that the courses were relevant to the cultural, economic, and professional contexts of their target audiences.

- **Malaysia:** Focused on fostering community engagement and innovative problem-solving, addressing local challenges in lifelong learning and technology adoption.
- **Indonesia:** Prioritized skill-building in technical areas such as internet routing and professional readiness for fresh graduates.
- **Philippines:** Emphasized health-related courses and advanced skills development tailored to national priorities and workforce requirements.

The output for this innovation is a set of courses that adhere to national standards, ensuring alignment with local needs and fostering relevance for their intended audiences.

4.2. Application of Mermaid for Visualizing Learning Paths and Course Structures

Mermaid was utilized to create text-based diagrams that mapped the structure of each course, providing a clear and interactive visualization of learning paths and interdependencies between course components. These diagrams streamlined communication among stakeholders and enhanced the clarity of course design.

- **Learning Paths:** Flowcharts showed the progression of modules and assessments, enabling stakeholders to understand the learner's journey.
- **Course Structures:** Complex relationships, such as prerequisites and feedback mechanisms, were easily visualized for refinement.
- **Collaboration:** The text-based nature of Mermaid allowed for easy updates, fostering iterative improvements in the course design.

The output for this innovation is a set of clear, interactive diagrams that facilitated collaboration and improved the understanding of course structures and learning pathways.

4.3. Integration of Hybrid Learning Modes

The courses were designed with hybrid learning modes to ensure flexibility and accessibility for diverse learners. This approach combined face-to-face components with online elements to deliver a balanced and engaging educational experience.

- **Face-to-Face Learning:** Hands-on workshops and group discussions encouraged collaboration and practical skill application.
- **Online Learning:** Self-paced modules and virtual classrooms provided flexibility, enabling learners from remote areas to access the courses.
- **Blended Delivery:** The integration of both modes (Online and Face-to-face) ensured that theoretical knowledge was reinforced through practical activities.

The output for this innovation is a set of hybrid courses designed to meet diverse learning needs, offering flexibility while maintaining engagement and interactivity.

The innovations adopted during the co-design process – such as leveraging national guidelines, visualizing learning paths with Mermaid, and integrating hybrid learning modes - ensured that the courses were relevant, practical, and tailored to the specific needs of each country. These tools and approaches enhanced the overall quality of the courses, providing meaningful and impactful learning experiences for all participants.

5. Outcomes and Impact

The micro-credential courses developed through the co-design process are anticipated to deliver significant benefits across learners, institutions, industries, and the broader community. These courses have been carefully designed to align with modern educational trends and address evolving workforce and societal needs, ensuring their relevance and value in contemporary contexts. Figure 3 shows the outcomes and impact of microcredential courses.

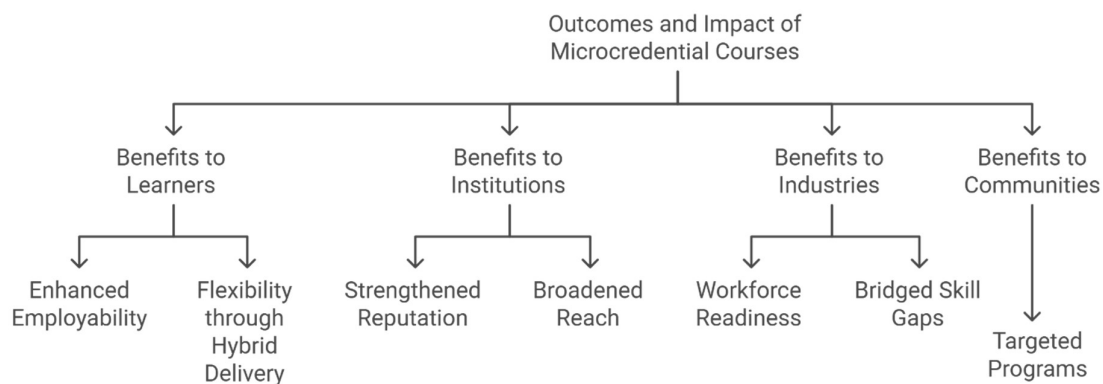


Figure 3: Outcomes and Impact of Micro-credential Courses

The courses provide substantial advantages for learners by enhancing their employability through the acquisition of practical, industry-relevant skills that directly improve their job prospects and professional development. The hybrid delivery modes offer flexibility, allowing learners to balance education with other commitments, while the personalized design of the courses caters to their specific needs, enabling targeted upskilling or reskilling opportunities. This empowers learners to develop competitive skillsets that align with their career aspirations and adapt to the demands of the evolving job market.

Institutions offering these courses benefit from strengthened reputations as leaders in micro credential education. By providing modern, impactful programs, they position themselves at the forefront of innovative education practices. The hybrid learning approach allows institutions to broaden their reach, attracting learners from diverse geographic and professional backgrounds. Collaborations with industries and academic partners further enhance institutional networks and promote the development of cutting-edge educational content, establishing institutions as pivotal hubs for lifelong learning and innovation.

Industries gain from these micro-credential courses by addressing workforce readiness and bridging skill gaps. By aligning the courses with industry-specific requirements, businesses can access tailored training solutions that enhance their workforce capabilities. These courses contribute to creating a skilled talent pool, improving productivity, and driving innovation within industries, enabling organizations to maintain competitiveness in dynamic markets.

Communities also stand to benefit significantly from the implementation of these courses. By addressing local challenges through targeted programs such as community engagement and problem-solving tracks, the courses empower participants to contribute meaningfully to societal development. Enhanced community leadership, greater collaboration, and the application of innovative solutions foster social cohesion and sustainable growth. Programs addressing health and well-being, such as those on lifestyle diseases, improve public health outcomes, making a tangible impact on the quality of life within communities.

The courses align closely with modern educational trends and workforce needs. Emphasizing lifelong learning, they cater to both traditional students and working professionals, fostering a culture of continuous skill enhancement. By integrating online and face-to-face learning, the courses reflect the growing trend of hybrid education, ensuring flexibility and accessibility for learners. The incorporation of digital tools and online platforms ensures the courses remain contemporary and adaptable to emerging technological advancements.

Moreover, the alignment of course content with workforce demands ensures the development of practical skills that are directly applicable in professional and societal contexts. The focus on technical, problem-solving, and community-oriented competencies equips learners to meet the challenges of evolving job markets and contribute meaningfully to their communities, ensuring their sustained relevance and employability.

Summary of Outcomes and Impact

Table 2: Summary of Outcome and Impact

Stakeholder	Impact
Learners	Enhanced employability, personalized upskilling, flexible hybrid learning, and opportunities for career growth.
Institutions	Strengthened reputation, broader reach, innovative collaborations, and leadership in education.
Industries	Workforce readiness, tailored training solutions, productivity improvement, enhanced employee skills and increase competitiveness.
Communities	Empowered leadership, provide individuals to drive innovation, problem-solving, contribute to sustainable growth.

In conclusion, the micro-credential courses offer multifaceted benefits, fostering a symbiotic relationship between learners, institutions, industries, and communities. By addressing real-world challenges and embracing modern educational practices, these courses prepare participants to excel in an increasingly complex and interconnected global environment.

6. Recommendations

The success of the micro-credential course co-design process underscores opportunities for future refinement, scalability, and broader adoption. This section outlines recommendations for improving micro-credential development, facilitating regional and international expansion, and guiding the next stage - course development and implementation.

6.1. Suggestions for Future Microcredential Development

Future iterations of micro-credential development should emphasize the integration of continuous feedback mechanisms to ensure courses remain relevant and impactful. Establishing formalized feedback loops with stakeholders, including learners, institutions, and industries, will help identify emerging trends and evolving needs. Incorporating these insights into iterative reviews will ensure the content stays updated with technological, pedagogical, and market developments.

Additionally, enhancing the use of innovative digital tools and technologies in course design and delivery is vital. Expanding interactivity and personalization through tools such as adaptive learning platforms can better cater to diverse learner needs and improve outcomes. Ensuring inclusivity by engaging diverse stakeholders, including underrepresented groups, will further strengthen the relevance and equity of micro-credential offerings.

6.2. Recommendations for Scalability and Regional Adoption

For scalability and adoption in new regions, a modular approach to course design is highly recommended. By developing adaptable course components, institutions can create flexible learning pathways that can be easily customized to meet the specific needs of different regions. This flexibility allows courses to be aligned with local guidelines, cultural contexts, and industry-specific requirements, ensuring greater relevance and impact.

Strategic partnerships with local governments, industries, and educational institutions will be crucial for the widespread adoption by aligning courses with regional priorities and fostering collaborative ownership.

Hybrid delivery models should be leveraged to expand access to underserved communities and remote areas. This requires investing in digital infrastructure and training educators to deliver online and blended learning effectively. Marketing strategies should focus on highlighting the career-oriented benefits, flexibility, and accessibility of micro-credentials to attract a broader range of learners.

Additionally, implementing standardized certification frameworks across regions will enhance the credibility and transferability of micro-credentials. This ensures learners can use their certifications globally, increasing the appeal of these programs.

6.3. Recommendations for the Next Stage: Course Development

As the project transitions to the next stage of course development, several recommendations can guide the process:

1. Content Development:

- Ensure alignment with the finalized course specifications, focusing on practical, real-world applications.
- Incorporate multimedia resources, case studies, and interactive content to enhance engagement.

2. Resource Allocation:

- Allocate adequate resources for content creation, instructional design, and platform integration.
- Engage subject matter experts and instructional designers to ensure high-quality materials.

3. Pilot Testing:

- Conduct pilot tests with small learner groups to identify areas for improvement.
- Gather feedback from participants to refine content and delivery methods before full-scale implementation.

4. Educator Training:

- Provide comprehensive training for educators on delivering hybrid and online courses effectively.
- Equip instructors with skills to manage digital tools and engage learners in virtual environments.

5. Monitoring and Evaluation:

- Establish clear metrics to evaluate the effectiveness of course content and delivery.
- Continuously monitor learner performance and feedback to ensure ongoing improvements.

6.4. Summary of Recommendations

Table 3: Summary of Recommendations

Area	Recommendations
Future Development	<ul style="list-style-type: none"> - Establish continuous feedback loops. - Integrate adaptive learning technologies. - Ensure inclusivity by engaging diverse stakeholders.
Scalability	<ul style="list-style-type: none"> - Use modular design for regional adaptation. - Build partnerships with local governments and industries. - Strengthen digital infrastructure for hybrid delivery.
Adoption	<ul style="list-style-type: none"> - Market career-oriented benefits to attract learners. - Standardize certification frameworks for global recognition. - Customize courses to align with regional priorities.
Next Stage: Course Development	<ul style="list-style-type: none"> - Align content with course specifications. - Conduct pilot tests for refinement. - Train educators on hybrid and online teaching. - Establish robust monitoring and evaluation frameworks.

In conclusion, adopting these recommendations will ensure that micro-credential courses evolve to meet the demands of learners, institutions, industries, and communities. Focusing on scalability and robust course development practices will extend the reach and impact of these programs, positioning them as a cornerstone of modern education and workforce development.

7. Conclusion

Summary of key findings and the importance of the initiative. The micro-credential course co-design initiative has proven to be a comprehensive and collaborative approach to addressing the evolving needs of learners, institutions, industries, and communities. Through this initiative, the participating institutions successfully developed micro-credential programs that align with national guidelines, cater to diverse learning needs, and adhere to modern educational and workforce trends.

The co-design process underscored the importance of stakeholder engagement, iterative refinement, and the integration of innovative tools to create high-quality and impactful courses. The use of structured frameworks and methodologies ensured that the courses addressed specific skills gaps while maintaining flexibility to adapt to regional and cultural contexts. By incorporating hybrid learning modes and advanced digital tools, the initiative positioned the courses as accessible, practical, and future-oriented.

Key findings from the initiative highlight its potential to empower learners with targeted skills, enhance institutional reputations, address industry-specific workforce needs, and foster community development. The courses not only equip individuals for immediate employment but also contribute to their long-term personal and professional growth. Additionally, the modular and scalable design of these courses enables their adoption across regions, ensuring broad applicability and long-term sustainability.

This initiative is particularly significant in its alignment with global trends in education, including the growing emphasis on lifelong learning, digital transformation, and the integration of competency-

based micro-credentials into traditional education systems. By bridging the gap between formal education and practical workforce requirements, these courses serve as a model for modern education and skills development.

In conclusion, the micro-credential co-design initiative exemplifies a forward-thinking approach to education. By addressing real-world challenges and fostering collaboration across institutions, industries, and communities, it lays a solid foundation for scalable, impactful, and inclusive educational programs. These courses will not only transform the lives of individual learners but also contribute to the broader goals of economic development, social progress, and global competitiveness.

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APPENDIX A: Details on Microcredential Courses Co-Design by Country

The appendix includes detailed course templates, specifications, and sample Mermaid diagrams to illustrate learning paths and workflows.

COURSES LIST

No	COUNTRY	HEI ³	COURSE
1.	Malaysia	UNIMAS	<ol style="list-style-type: none"> 1. (T1-M1) Micro-credential on Community Engagement: Understanding Your Community 2. (T1-M2) Micro-credential on Community Engagement: Community Protocol 3. (T1-M2) Micro-credential on Community 4. (T2-M1) Micro-credential on Systematic Inventive Problem Solving Using TRIZ 5. (T2-M2) Micro-credentials on Problem Analysis and Solving Tools Using TRIZ 6. (T2-M3) Micro-credential on Community-based Problem Solving Using TRIZ
2.	Malaysia	USM	<ol style="list-style-type: none"> 1. Comprehensive Care for Stroke Survivors: A holistic Approach for Caregivers
3.	Indonesia	UB	<ol style="list-style-type: none"> 1. Micro-credential on Routing on the Internet: Understanding Routing on the Internet 2. Micro-credential on Routing on the Internet: Intra-domain Routing 3. Micro-credential on Routing on the Internet: Inter-domain Routing
4.	Indonesia	UNSRAT	<ol style="list-style-type: none"> 1. Work-Ready! Pre-Employment Micro Course for Undergraduates and Fresh Graduates
5.	Philippines	UO and ADMU (join courses)	<ol style="list-style-type: none"> 1. Digital Workplace Competency Training (DWCT) 2. Foundations of Lifestyle Diseases Management 3. Lifestyle Interventions in Disease Management 4. Patient-Centered Care and Holistic Approach

³ Higher Education Institution

MALAYSIA

Malaysia

Universiti Malaysia Sarawak (UNIMAS)

Track 1: Community Engagement

List Courses:


1. (T1-M1) Microcredential on Community Engagement: Understanding Your Community
2. (T1-M2) Microcredential on Community Engagement: Community Protocol
3. (T1-M2) Microcredential on Community Engagement: People Centered Approach

Track 2: Innovative Problem Solving for Community Using TRIZ

List Courses:

1. (T2-M1) Microcredential on Systematic Inventive Problem Solving Using TRIZ
2. (T2-M2) Microcredential on Problem Analysis and Solving Tools Using TRIZ

(T2-M3) Microcredential on Community-based Problem Solving Using TRIZ



Micro courses:
Enrolments Opening Soon

1. Community Engagement: Understanding Your Community
2. Community Engagement: Community Protocol
3. Community Engagement: People Centered Approach
4. Systematic Inventive Problem Solving Using TRIZ
5. Problem Analysis & Solving Tools Using TRIZ
6. Community-based Problem Solving Using TRIZ

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Track 1: Community Engagement

T1 M1 – (Track 1 Module 1)

Microcredential on Community Engagement: Understanding Your Community

Course Outline

Course Name	Microcredential on Community Engagement: Understanding Your Community
Synopsis	This is an immersive course designed to introduce participants to the principles and practices of community engagement and development. Through exploring key themes such as innovative thinking, strategic leadership, lessons from past initiatives, the realities of development, and participative, people-centered approaches, participants will gain a comprehensive understanding of how to effectively engage with and contribute to community projects. This course combines theoretical insights with practical applications, preparing participants for meaningful participation in community development efforts.
Course Objectives	<ol style="list-style-type: none"> 1. Foster Innovative Thinking and Strategic Leadership: Equip participants with innovative thinking methodologies and strategic leadership skills necessary for the effective design and implementation of community projects. 2. Analyze Lessons from Past Community Engagements: Provide participants with the tools to critically analyze previous community engagement efforts to derive actionable insights for future initiatives. 3. Promote Participatory and People-Centered Development: Emphasize the importance of participatory approaches that place community needs and voices at the forefront of development efforts.
Learning Outcomes	<ol style="list-style-type: none"> 1. Apply Innovative and Strategic Approaches: Participants will be able to apply innovative thinking and strategic planning in the development and management of community projects. 2. Incorporate Lessons Learned into Community Projects: Participants will demonstrate the ability to critically analyze past engagements, integrating lessons learned into the planning and execution of new community initiatives. 3. Design and Implement Participatory Community Projects: Participants will develop the skills to design and implement community projects that are participatory, inclusive, and centered around the needs and voices of community members.
Mode of Delivery	Online
Duration	2 weeks

T1 M2 – (Track 1 Module 2)

Microcredential on Community Engagement: Community Protocol

Course Outline

Course Name	Microcredential on Community Engagement: Community Protocol
Synopsis	This course offers participants a thorough exploration of the protocols and practices that underpin effective community engagement, diversity management, and resource stewardship. It spans a range of vital topics, from community engagement and participation protocols to the management of biocultural resources, marine ecosystems, community forests, as well as traditional conflict resolution and cultural heritage preservation. Through a blend of theoretical insights and practical case studies, the course aims to equip participants with a deep understanding of the diverse community protocols in contemporary settings and how they can be leveraged for sustainable development and cultural preservation. Best practices from around the globe are integrated into the learning process, providing participants with real-world examples of successful community protocol implementation.
Course Objectives	<ol style="list-style-type: none"> 1. Understand Community Engagement Protocols: Equip participants with knowledge of various community engagement and participation protocols, emphasizing the importance of inclusivity and effective communication in fostering community development. 2. Explore Diverse Community Management Practices: Provide an in-depth understanding of different community protocol applications, including biocultural conservation, marine and forest management, and cultural heritage preservation, to illustrate the versatility and impact of these protocols across various contexts. 3. Analyze Case Studies for Best Practices: Offer participants the opportunity to study and learn from real-world case studies, highlighting best practices and lessons learned in the application of community protocols for sustainable development and conflict resolution.
Learning Outcomes	<ol style="list-style-type: none"> 1. Apply Community Engagement Protocols: Participants will be able to identify and apply appropriate community engagement and participation protocols in diverse settings, fostering inclusive and effective community involvement. 2. Adapt Management Practices to Community Needs: Participants will gain the skills to adapt and apply various community management practices, including biocultural conservation and resource management protocols, tailored to the unique needs and contexts of different communities. 3. Implement Best Practices from Global Case Studies: Participants will learn to analyze and extract best practices from case studies, applying these insights to develop and implement successful community protocol strategies in their own work or community settings.
Mode of Delivery	Online
Duration	2 weeks

T1 M3 – (Track 1 Module 3)

Microcredential on Community Engagement: People Centered Approach

Course Outline

Course Name	Microcredential on Community Engagement: People Centered Approach
Synopsis	This course offers a comprehensive exploration of the Human Development Approach and the Human Rights-based Approach, focusing on methodologies that prioritize people-centred strategies for community development. Participants will delve into the nuances of basic need fulfilment, need analysis, and the balance between needs versus capacities and assets. The course further examines enhancing human capabilities, community capacity-building, asset development, uncovering potential leaders, and ethno-development within the Human Development Approach. Additionally, it covers the application of the Human Rights-based Approach in community engagement, consultation, mobilization, and effective facilitation strategies. Through a blend of theoretical understanding and practical application, this course aims to equip participants with the knowledge and skills to implement development strategies that are both effective and aligned with human rights principles.
Course Objectives	<ol style="list-style-type: none"> 1. Understand People-Centered and Human Development Approaches: To provide participants with a deep understanding of people-centered approaches, focusing on fulfilling basic needs, analysing community needs, and leveraging community capacities and assets. 2. Explore Human Rights-based Approaches to Community Engagement: Equip participants with knowledge and skills to apply human rights-based approaches in community engagement, consultation, and mobilization efforts, ensuring that these strategies are inclusive and participatory. 3. Develop Skills in Capacity-Building and Facilitation: Foster participants' ability to build community capacities, uncover and develop potential leaders, and employ effective facilitation strategies in diverse community settings.
Learning Outcomes	<ol style="list-style-type: none"> 1. Apply People-Centered Strategies: Participants will be able to effectively apply people-centred strategies in their work, accurately assessing and addressing community needs while leveraging local capacities and assets. 2. Implement Human Rights-based Approaches: Participants will gain the competence to implement human rights-based approaches in community engagement and development projects, ensuring that these initiatives are conducted in a respectful, inclusive, and participatory manner. 3. Facilitate Community Capacity-Building: Participants will learn how to facilitate community capacity-building efforts, identify, and support potential leaders, and utilize community assets for sustainable development.

*M1: Microcredential on
Community Engagement:
Understanding Your
Community*

*M2: Microcredential on
Community Engagement:
Community Protocol*

*M3: Microcredential on
Community Engagement:
People Centered Approach*

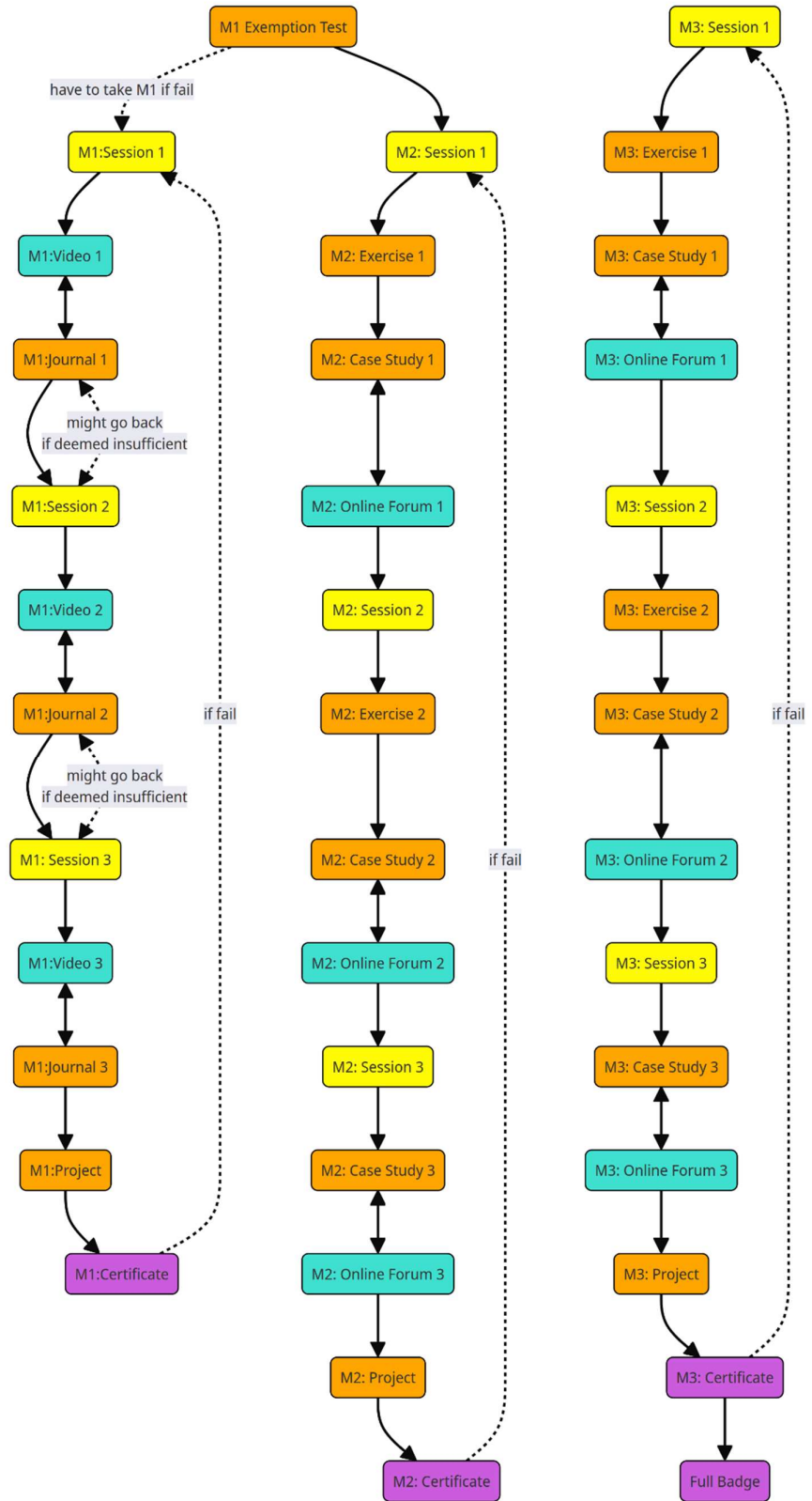


Figure 4: CoDe-Graph for Microcredential Courses for Track 1 (UNIMAS)

Track 2: Innovative Problem Solving for Community Using TRIZ

T2 M1 – (Track 2 Module 1)

Microcredential on Systematic Inventive Problem Solving Using TRIZ

Course Outline

Course Name	Microcredential on Systematic Inventive Problem Solving Using TRIZ
Synopsis	This course provides an in-depth overview of Systematic Inventive Problem Solving, a method designed to overcome psychological inertia and foster systematic innovation in various fields. Participants will be introduced to the foundational concepts of psychological inertia and how it hinders problem-solving and innovation. The course then moves on to a detailed exploration of systematic tools that can be employed to break free from these mental blocks. A significant focus is placed on illustrating the application of these concepts through the 40 Inventive Principles, providing participants with a comprehensive toolkit for creative problem-solving. Through lectures, case studies, and interactive exercises, participants will learn to apply these principles to real-world challenges, enhancing their ability to think innovatively and solve problems more effectively.
Course Objectives	<ol style="list-style-type: none"> 1. Understand Psychological Inertia: Equip participants with an understanding of psychological inertia, its impact on problem-solving and innovation, and strategies for overcoming it. 2. Explore Systematic Tools for Innovation: Introduce participants to a range of systematic tools designed to facilitate innovative thinking and problem-solving, laying the groundwork for their application in various scenarios. 3. Illustrate the 40 Inventive Principles: Provide participants with a deep dive into the 40 Inventive Principles, demonstrating how these can be applied to overcome challenges and generate creative solutions.
Learning Outcomes	<ol style="list-style-type: none"> 1. Identify and Overcome Psychological Inertia: Participants will be able to recognize signs of psychological inertia in themselves and others and apply specific strategies to overcome these barriers to innovation. 2. Utilize Systematic Tools for Problem Solving: Participants will gain proficiency in using systematic tools to approach problems in a structured and innovative way, enhancing their problem-solving skills. 3. Apply the 40 Inventive Principles in Real-World Scenarios: Participants will learn how to apply the 40 Inventive Principles to a variety of challenges, enabling them to generate creative solutions and foster innovation in their professional and personal endeavours.
Mode of Delivery	Online
Duration	2 weeks

T2 M2 – (Track 2 Module 2)

Microcredential on Problem Analysis and Solving Tools Using TRIZ

Course Outline

Course Name	Microcredential on Community-based Problem Solving Using TRIZ
Synopsis	This Microcredential course on Problem Analysis and Solving Tools Using TRIZ offers participants a structured approach to understanding and applying the TRIZ methodology, a powerful and systematic problem-solving framework. The course begins by distinguishing between problem and solution models, setting the foundation for effective analysis and resolution strategies. Participants will delve into typical TRIZ problem-solving modeling, exploring various types of problems and the inventive principles designed to address them. The curriculum also covers the basic components of TRIZ, providing a comprehensive toolkit for innovative problem solving. Through interactive lessons, practical exercises, and real-world case studies, participants will learn to apply TRIZ methodologies to overcome complex challenges in their professional fields.
Course Objectives	<ol style="list-style-type: none"> 1. Understand the TRIZ Methodology: Equip participants with a solid understanding of the TRIZ methodology, including its foundational principles and how it distinguishes between problems and solutions. 2. Explore TRIZ Problem-Solving Modelling: Introduce participants to typical TRIZ problem-solving models and the categorization of problems, focusing on inventive problem solving. 3. Learn the Basic Components of TRIZ: Provide a comprehensive overview of the basic components of TRIZ, preparing participants to apply these tools in various problem-solving contexts.
Learning Outcomes	<ol style="list-style-type: none"> 1. Differentiate Between Problem and Solution Models: Participants will be able to clearly distinguish between problem and solution models, utilizing this understanding to approach challenges more effectively. 2. Apply TRIZ Problem-Solving Models: Participants will gain proficiency in applying TRIZ problem-solving models to identify and solve inventive problems, enhancing their ability to think creatively and systematically. 3. Utilize Basic TRIZ Components in Problem Solving: Participants will learn to employ the basic components of TRIZ in their problem-solving efforts, enabling them to develop innovative solutions to complex problems.
Mode of Delivery	Online
Duration	2 weeks

T2 M3 – (Track 2 Module 3)

Microcredential on Community-based Problem Solving Using TRIZ

Course Outline

Course Name	Microcredential on Community-based Problem Solving Using TRIZ
Synopsis	The Microcredential on Community-based Problem Solving Using TRIZ is designed to equip participants with strategic thinking and domain-related tools for effective problem-solving within community contexts. This course introduces the necessity of strategic thinking in addressing community issues, providing an overview of various tools that can be applied for inventive leadership and future planning. Participants will learn how to utilize TRIZ methodologies to chart the future of communities, map available resources efficiently, and apply enhancement strategies through detailed case studies. This course aims to blend theoretical knowledge with practical applications, enabling participants to tackle real-world community problems by identifying the right problems and devising innovative solutions.
Course Objectives	<ol style="list-style-type: none"> 1. Understand the Role of Strategic Thinking in Community Problem Solving: To equip participants with an understanding of strategic thinking, its importance in community development, and an overview of tools that facilitate strategic analysis and decision-making. 2. Learn Domain-Related TRIZ Tools for Community Engagement: Introduce participants to TRIZ tools relevant to community problem solving, such as inventive leadership and resource mapping, to effectively plan and implement community projects. 3. Apply TRIZ Methodologies in Real-World Scenarios: Provide participants with the skills to apply TRIZ methodologies and tools through enhancement strategies and case studies, focusing on solving the right problems within communities.
Learning Outcomes	<ol style="list-style-type: none"> 1. Apply Strategic Thinking to Community Problems: Participants will be able to utilize strategic thinking tools to analyze community problems comprehensively and identify effective solutions. 2. Leverage TRIZ Tools for Inventive Leadership: Participants will learn how to apply domain-related TRIZ tools to exhibit inventive leadership, enabling them to guide community projects towards innovative solutions. 3. Solve Community Problems Using TRIZ Methodologies: Participants will gain the ability to use TRIZ methodologies in real-world community settings, effectively applying enhancement strategies and insights from case studies to address and solve pertinent community issues.
Mode of Delivery	Online
Duration	2 weeks

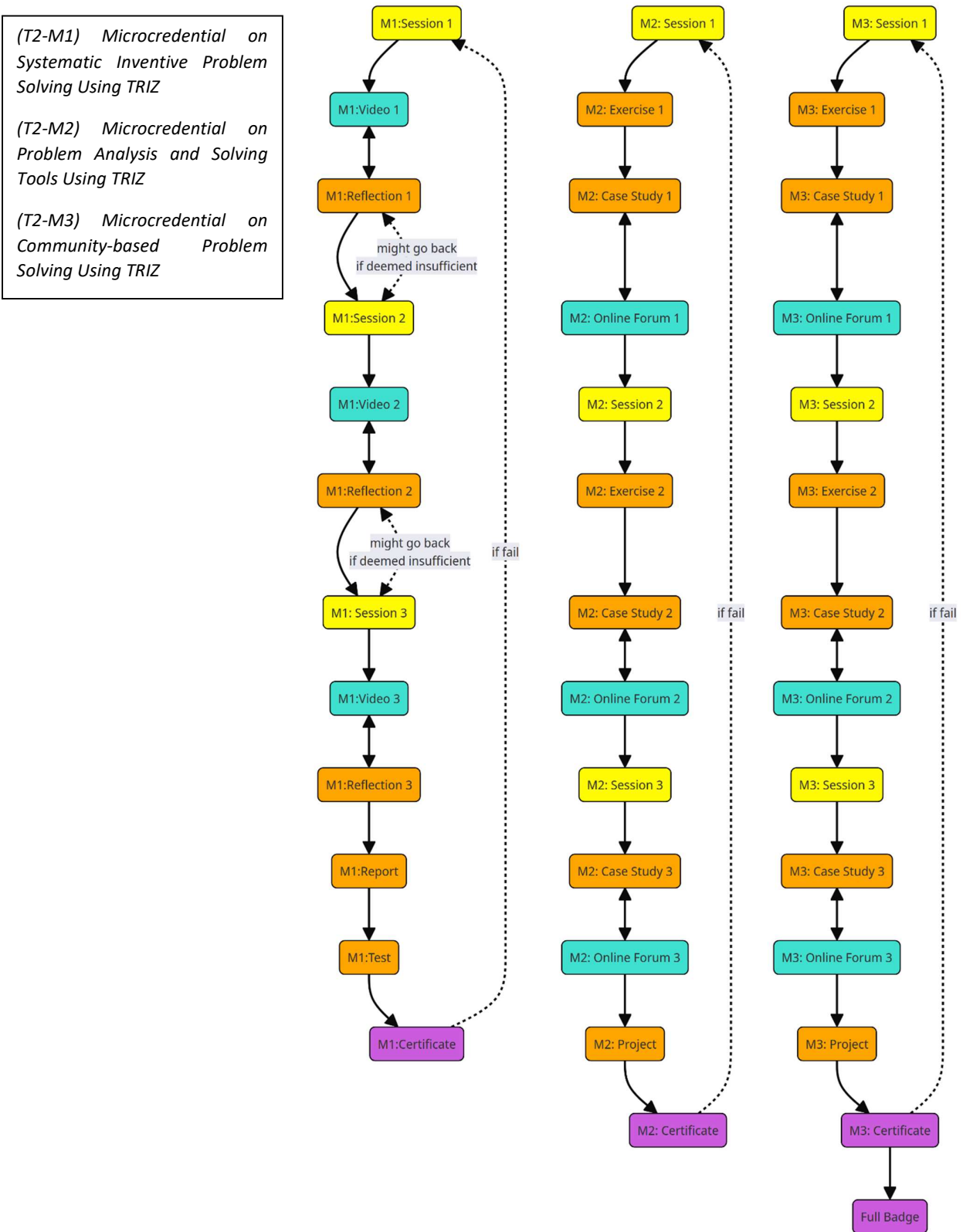


Figure 5: CoDe-Graph for Microcredential Courses for Track 2 (UNIMAS)

Course Name	COMPREHENSIVE CARE FOR STROKE SURVIVORS: A HOLISTIC APPROACH FOR CAREGIVERS
Course Synopsis	This course provides caregivers with the knowledge and skills necessary for holistic care of stroke survivors, emphasizing practical strategies for daily living support, overcoming challenges, and promoting caregiver well-being.
Course Learning Outcome (CLO):	By the end of this course, participants will be able to acquire skills related to comprehensive and empathetic care to stroke survivors, ensuring their safety, promoting independence, and utilizing effective caregiving strategies.
Target Participants:	<p>Comprehensive Care for Stroke Survivors: A Holistic Approach for Caregivers " is intended for a diverse range of individuals involved in caregiving and support roles for stroke survivors. The target group includes, but is not limited to:</p> <ul style="list-style-type: none"> • Family members and relatives caring for a loved one who has experienced a stroke. • Professional health caregivers working in home care, assisted living, or long-term care facilities. • Nurses, nursing assistants, and healthcare professionals providing stroke care. • Rehabilitation therapists, occupational therapists, and speech-language pathologists. • Social workers and support staff involved in stroke survivor care. • Students pursuing healthcare or caregiving-related fields seeking specialized knowledge. • Individuals interested in becoming caregivers for stroke survivors.



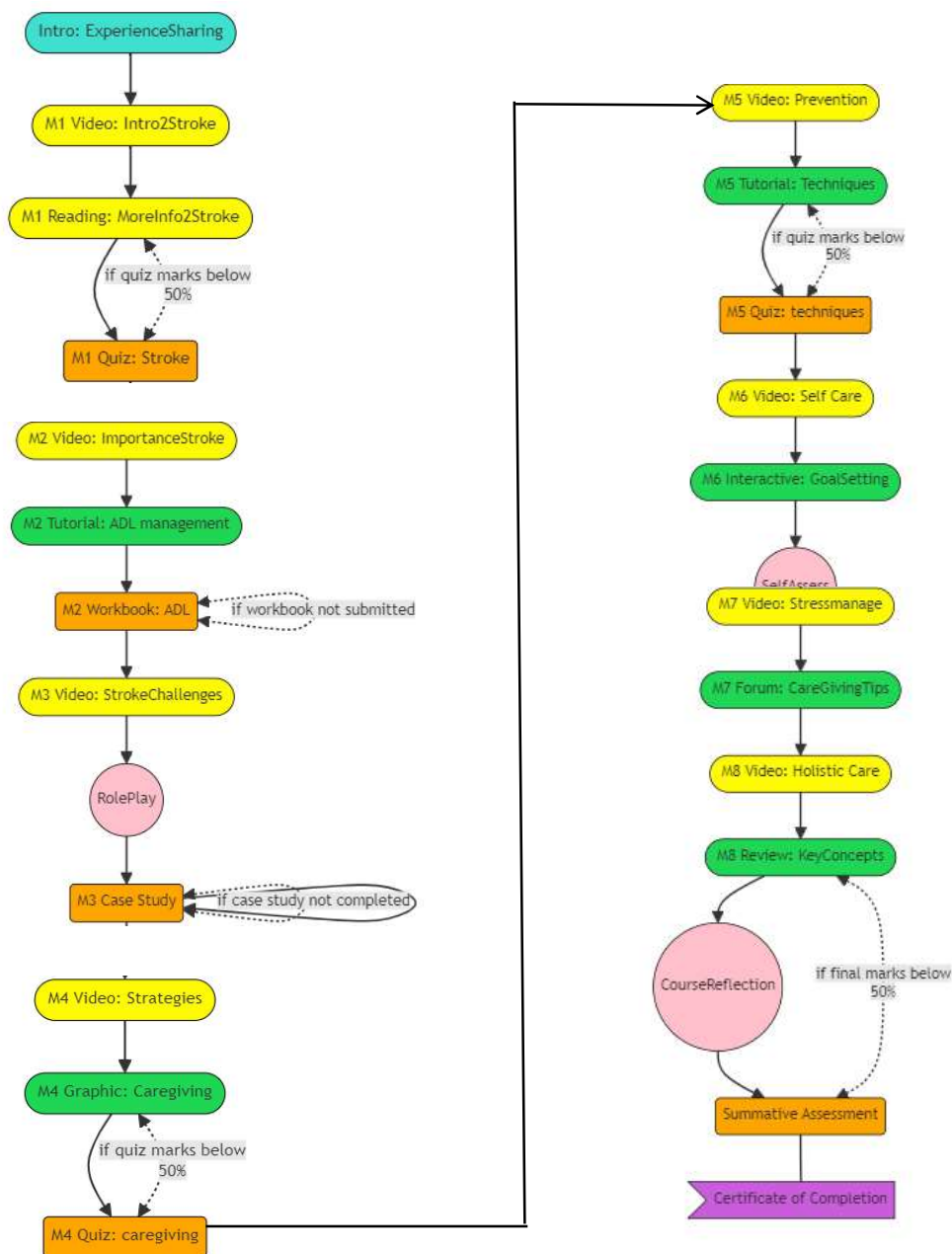


Figure 6: CoDe-Graph for Microcredential Courses for USM

INDONESIA

Indonesia

UNIVERSITAS BRAWIJAYA INDONESIA (UB)

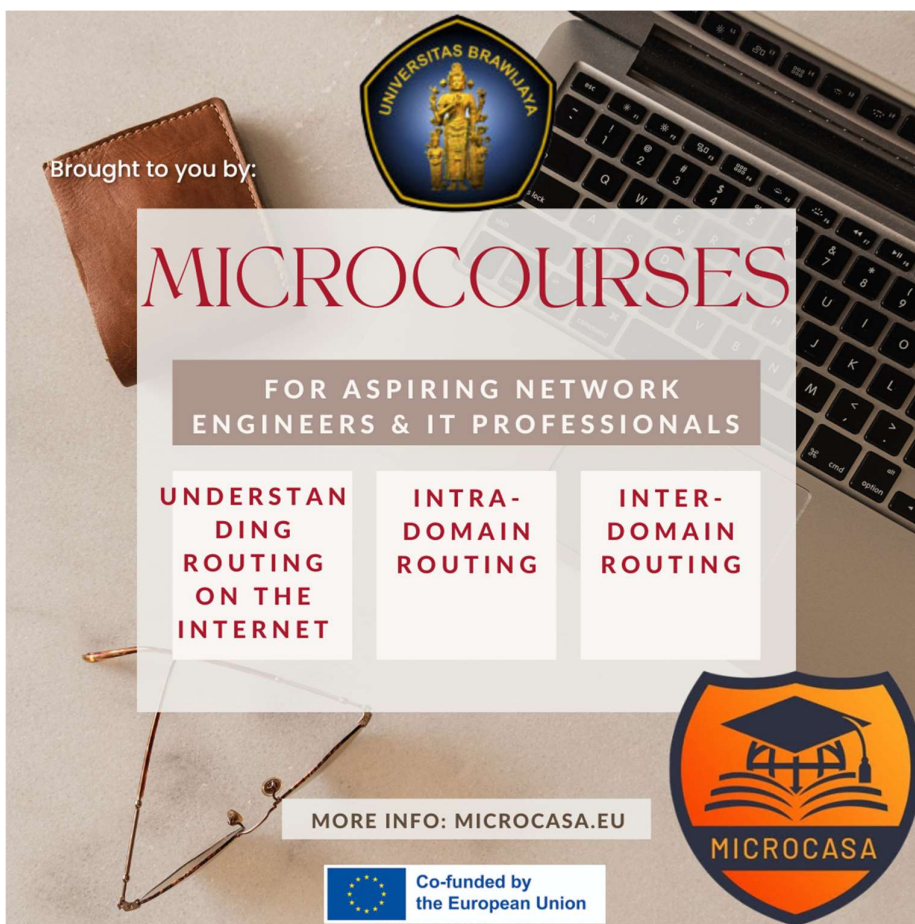
Track 1: Routing on the Internet

1. Microcredential on Routing on the Internet: Understanding Routing on the Internet
2. Microcredential on Routing on the Internet: Intra-domain Routing
3. Microcredential on Routing on the Internet: Inter-domain Routing

Microcredential on Routing on the Internet: Understanding Routing on the Internet (M1)

Course Name	Microcredential on Routing on the Internet: Understanding Routing on the Internet
Description	"Understanding Routing on the Internet" is an engaging and practical micro course designed to equip aspiring network engineers and IT professionals with the foundational knowledge and skills necessary to understand and manage routing in complex network environments. Through a combination of theoretical knowledge and hands-on labs, participants will explore the intricacies of internet networks, network services, and essential configurations involving web servers and DNS. The course culminates in a comprehensive assessment that prepares participants for a successful career in networking.
Course Objectives	<ul style="list-style-type: none"> • To provide a foundational understanding of the structure and function of the internet and its networks. • To explain the various network services and their roles in data communication. • To offer practical experience through lab activities focusing on web and DNS configurations. • To discuss the career opportunities and paths available in the field of networking. • To evaluate the participants' knowledge and skills through a final course assessment.
Learning Outcomes	<ol style="list-style-type: none"> 1. Describe the Basic Structure and Functionality of the Internet and Networks: <ul style="list-style-type: none"> • Identify key components of networks such as routers, switches, and servers. • Explain how data is transmitted across the internet through various network protocols. 2. Understand and Articulate Network Services: <ul style="list-style-type: none"> • Define what network services are, including common protocols and their purposes (e.g., HTTP, HTTPS, DNS). • Describe how these services contribute to the functioning of the internet and facilitate user experiences. 3. Configure Web and DNS Settings through Hands-On Practice: <ul style="list-style-type: none"> • Successfully configure a basic web server and set up domain name system settings in a controlled lab environment. • Troubleshoot common issues encountered during web and DNS configurations. 4. Explore Career Opportunities in Networking: <ul style="list-style-type: none"> • List potential career paths within the field of networking.

	<ul style="list-style-type: none"> • Understand the skills and certifications beneficial for advancing in a networking career. <p>5. Demonstrate Proficiency in Internet Routing Concepts:</p> <ul style="list-style-type: none"> • Apply knowledge of network structure and services in a simulated environment. • Successfully complete the final assessment to demonstrate understanding of course content.
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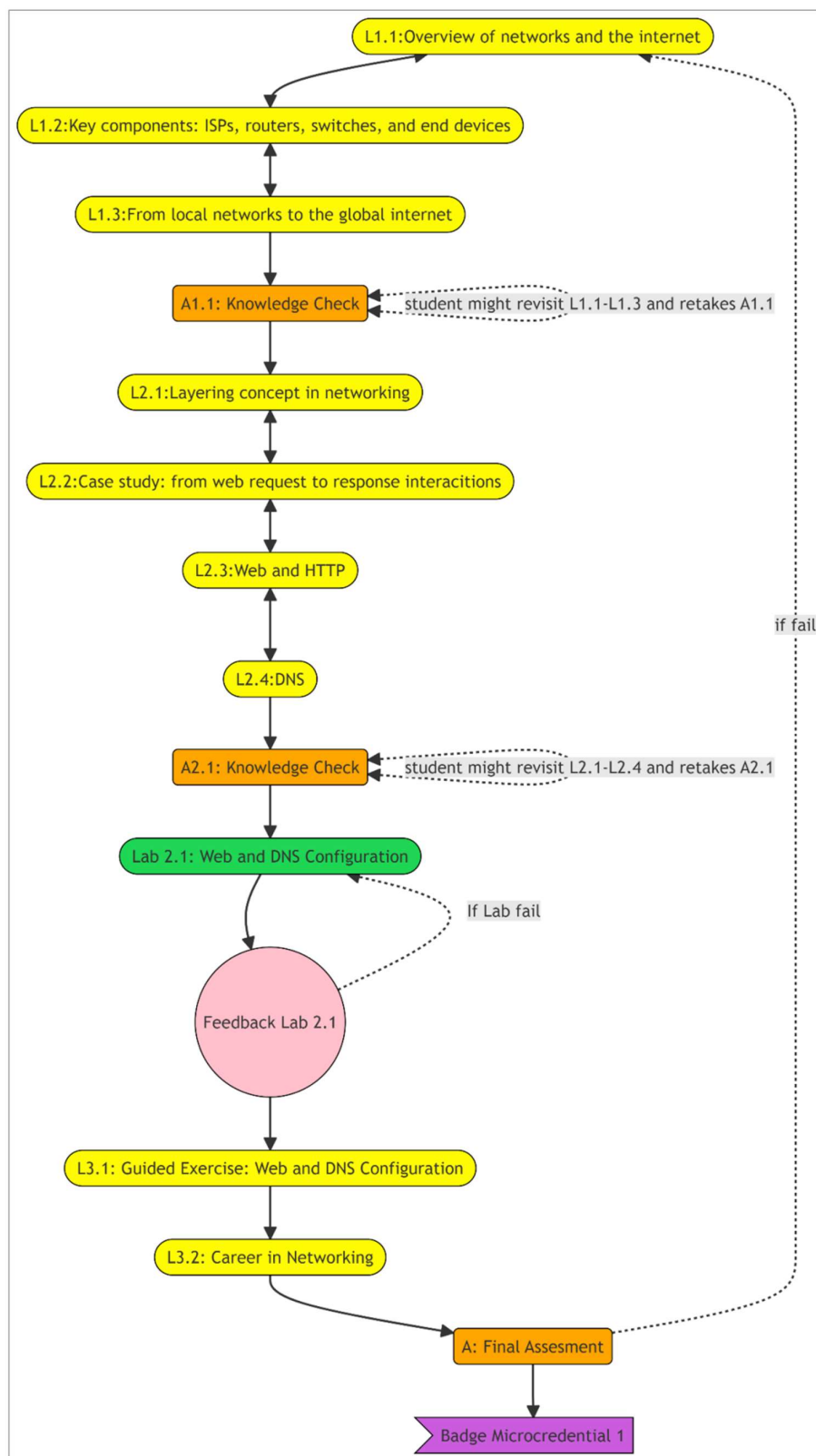


Figure 7: CoDe-Graph for Microcredential Courses - Understanding Routing on the Internet (UB)

Microcredential on Routing on the Internet: Intra-domain Routing (M2)

Course Name	Microcredential on Routing on the Internet: Intra-domain Routing
Description	"Intra-domain Routing Essentials" is a focused micro course designed to teach the fundamentals of intra-domain routing to networking professionals and students. This course covers key concepts such as IP addressing, subnetting, routing protocols, and algorithms, alongside hands-on labs that allow learners to apply their knowledge. Through detailed lectures and interactive activities, participants will gain a robust understanding of how routers communicate within a single routing domain using both static and dynamic routing techniques.
Course Objectives	<ul style="list-style-type: none"> • To introduce and explain the fundamentals of IP addressing, including IPv4 and IPv6. • To provide an understanding of subnetting and its importance in network design. • To discuss the concepts of routing and forwarding, including the roles of the control plane and data plane. • To explore static and dynamic routing methodologies and their applications. • To teach the operation and configuration of key routing protocols such as OSPF and RIP through practical lab exercises.

Learning Outcomes	<ol style="list-style-type: none"> 1. Understand and Apply IP Addressing and Subnetting Techniques: <ul style="list-style-type: none"> • Explain the difference between IPv4 and IPv6, including their address structures. • Successfully create subnet masks and implement subnetting for network segmentation. 2. Grasp the Fundamentals of Routing and Forwarding: <ul style="list-style-type: none"> • Differentiate between routing and forwarding processes. • Describe the functions of the control and data planes in network routers. • Compare and contrast static and dynamic routing, understanding when to use each. 3. Configure Routers Using Static Routing: <ul style="list-style-type: none"> • Set up static routing in a network environment to ensure specified traffic paths. 4. Understand and Implement Routing Algorithms: <ul style="list-style-type: none"> • Explain how Dijkstra's and the Link-State algorithm contribute to network routing decisions. • Describe the Bellman-Ford equation and how the Distance Vector algorithm is used in routing. 5. Operate and Configure OSPF and RIP Protocols: <ul style="list-style-type: none"> • Set up and troubleshoot OSPF to enhance network efficiency and scalability. • Configure RIP in a network simulation to understand its operations and limitations. 6. Demonstrate Practical Routing Skills in Lab Settings: <ul style="list-style-type: none"> • Apply theoretical knowledge to configure and troubleshoot routing protocols in OSPF and RIP through hands-on labs.
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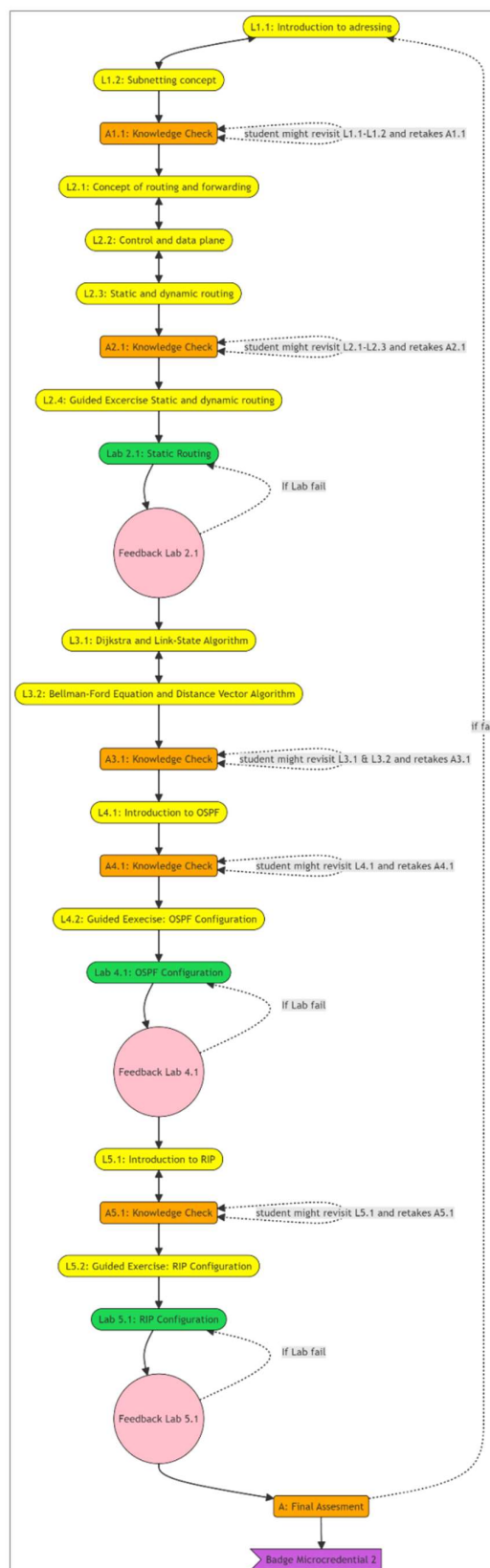


Figure 8: CoDe-Graph for Microcredential Courses - Intra-domain Routing (UB)

Microcredential on Routing on the Internet: Inter-domain Routing (M3)

Course Name	Microcredential on Routing on the Internet: Inter-domain Routing
Description	"Inter-domain Routing: Mastering BGP and Beyond" is a focused and intensive micro course designed for network engineers, IT professionals, and students interested in understanding how large-scale internet routing is managed across different autonomous systems. This course dives deep into the concepts of autonomous systems (AS), the pivotal role of the Border Gateway Protocol (BGP), and the interactions between Internet Service Providers (ISPs) that facilitate global internet connectivity. Participants will engage with theoretical concepts, hands-on labs for BGP configuration, and a project simulating a mini internet, offering both practical experience and a comprehensive understanding of inter-domain routing.
Course Objectives	<ul style="list-style-type: none"> • To elucidate the concept and importance of autonomous systems in the internet infrastructure. • To explain the necessity and mechanisms of inter-domain routing, with a focus on BGP. • To explore the operational roles and strategies of ISPs in routing data across the internet. <ul style="list-style-type: none"> • To provide hands-on experience in configuring BGP and troubleshooting common issues. • To culminate the learning experience with a project that simulates routing in a scaled-down version of the internet.

Learning Outcomes	<ol style="list-style-type: none"> 1. Understand Autonomous Systems: <ul style="list-style-type: none"> • Define what autonomous systems are and their significance in the internet's structure. • Discuss the necessity of inter-domain routing and the roles of different autonomous systems. 2. Master Fundamental Concepts of BGP: <ul style="list-style-type: none"> • Explain the basic operational mechanisms of BGP, including how peering relationships are established and maintained. • Navigate through BGP routing tables and understand the nuances of route advertisement and selection. • Implement BGP policy and understand its impact on route selection and traffic flow. 3. Configure BGP: <ul style="list-style-type: none"> • Conduct hands-on configuration of BGP on routers in a controlled lab environment. • Troubleshoot and resolve common configuration issues. • Evaluate the effectiveness of BGP configurations and policies in a simulated network environment. 4. Analyse the Role of ISPs in Inter-domain Routing: <ul style="list-style-type: none"> • Describe how ISPs interact with each other through BGP to route traffic across the internet. • Assess the business and technical considerations ISPs must balance in their routing policies. 5. Implement a Mini Internet Project: <ul style="list-style-type: none"> • Simulate a mini internet to apply the learned concepts in a project that mimics real-world inter-domain routing scenarios.
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Learning Outcomes	<ul style="list-style-type: none">• Analyze and optimize the network setup to ensure efficient data flow and connectivity. <p>6. Demonstrate Comprehensive Understanding through Final Assessment:</p> <ul style="list-style-type: none">• Successfully complete a final course assessment that tests theoretical knowledge and practical skills in inter-domain routing.
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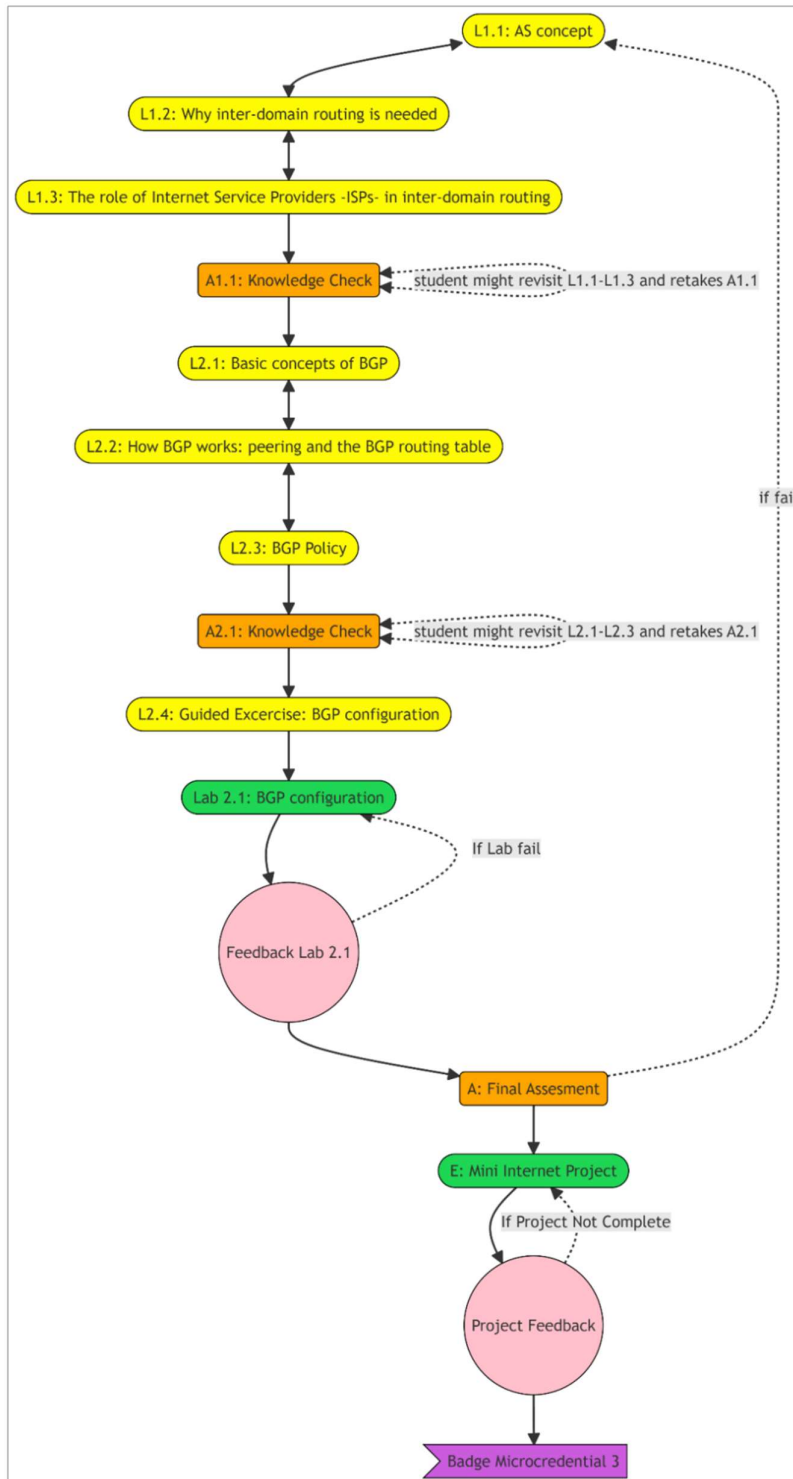


Figure 9: CoDe-Graph for Microcredential Courses - Inter-domain Routing (UB)



UNSRAT

Course name	Work-Ready! Pre-Employment Micro Course for Undergraduates and Fresh Graduates
Synopsis	The Work-Ready! Pre-Employment Micro Course is designed to equip final year undergraduate students and fresh graduates with essential skills and knowledge to enhance their employability in today's competitive job market. Through a combination of interactive modules, practical exercises, and real-world case studies, participants will gain insights into key areas such as professional communication, interview techniques, resume writing, and workplace etiquette.
Course Objective	<ol style="list-style-type: none">1. To develop essential employability skills required by employers.2. To enhance participants' confidence in job search and application processes.3. To equip participants with effective communication and interpersonal skills.4. To provide practical strategies for successful interview preparation and performance.5. To foster a professional mindset and workplace ethics among participants.
Course Learning Outcome	<p>By the end of this course, participants will be able to:</p> <ol style="list-style-type: none">1. Demonstrate effective communication skills in various professional contexts.2. Create a compelling resume and cover letter tailored to specific job opportunities.3. Employ strategies for successful job search, including online networking and job portal utilization.4. Prepare and present themselves confidently in job interviews, showcasing their strengths and experiences.5. Understand and apply professional etiquette and workplace norms in diverse settings.
Mode of Delivery	Online, self pace
Duration	17-24 hours (Approx. 2 weeks)

Course Model

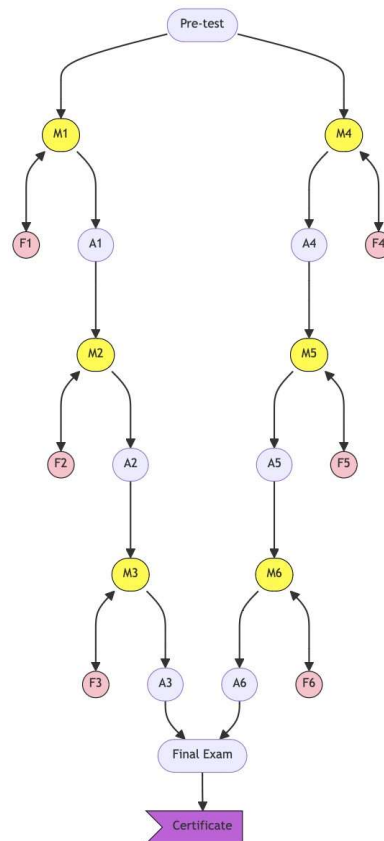


Figure 10: CoDe-Graph for Microcredential Courses - Work-Ready! Pre-Employment Micro Course

Description:

Participants in the learning program begin by completing a Pre-Test. They have the option to start with either Topic 1 or Topic 2. Within their chosen topic, participants study all learning modules sequentially. During module study, participants engage in discussions via the Forum feature, interacting with both instructors and fellow participants regarding the module content. Upon completing each module, participants undertake an assessment related to that module. Once they've completed the final module within their chosen topic, participants can proceed to the first module of another topic they haven't yet studied. Upon finishing all topics and modules and completing all assessments, participants are eligible to take the Final Exam. The combined assessment scores from all involved assessments in this Micro Course determine the participants' pass or fail status. Participants who pass are entitled to receive a certificate of completion.

PHILIPPINES

Philippines



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Micro courses:
Enrolments Opening Soon

Four course topics are listed in callout boxes:

- Digital Workplace Competency Training
- Foundations of Lifestyle Diseases Management
- Lifestyle Interventions in Disease Management
- Patient-Centered Care and Holistic Approach

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University of the Philippines Open University and Ateneo De Manila University (Join courses)

Course Name	Digital Workplace Competency Training (DWCT)
Synopsis	The course promises to be an insightful journey into enhancing digital competencies in the modern workplace. DWCT aims to promote digital literacy and proficiency by focusing on developing critical office efficiency capabilities. Covering information literacy, communication skills in digital environments, digital safety, and solving technology-related problems.
Course Objectives	<ol style="list-style-type: none"> 1. Equip participants with the necessary digital skills and tools to enhance productivity, foster strong team connections, and maintain well-being in digitally-enabled work environments. 2. Enable participants to use various digital collaboration tools for effective communication, file sharing, and location-independent work arrangements. 3. Teach participants how to implement protective security measures and tools, and adopt best security practices in an online work environment. 4. Help participants apply self-management skills, digital communication etiquette, and effective online work practices in digitally-enabled work arrangements. 5. Train participants to employ project management tools to improve productivity and maintain a healthy work-life balance in a digital work environment. 6. Enable participants to utilize cloud-based systems, troubleshoot common technology issues, and integrate AI ethically and effectively within the workplace.
Learning Outcomes	<p>At the end of the course, the participants will be able to:</p> <ol style="list-style-type: none"> 1. Demonstrate the essential skills and tools needed to thrive in digitally-enabled work environments, enhancing their productivity, fostering strong connections with their teams, and maintaining well-being; 2. Use a variety of digital collaboration tools for effective communication, file sharing, and location-independent work arrangements ; 3. Implement protective/security measures and tools and adopt best security practices in a online work environment; 4. Apply self-management skills, digital communication etiquette and effective online work practices in digitally-enabled work arrangements;



	<ol style="list-style-type: none"> Employ project management tools to improve productivity and maintain a healthy work-life balance in a digital work environment; Utilize cloud-based systems, troubleshoot common technology issues and integrate AI ethically and effectively within the workplace specifically in a digital work environment;
Mode of Delivery	Online
Duration	3 weeks

Course Name	Foundations of Lifestyle Diseases Management
Synopsis	This microcourse offers a comprehensive introduction to the management of lifestyle diseases, focusing on diabetes and hypertension. Designed for healthcare professionals, this course provides a blend of theoretical knowledge and practical skills essential for effectively diagnosing and managing these prevalent conditions. Through detailed exploration of pathophysiology, diagnostic criteria, and medical management, participants will be prepared to deliver high-quality, evidence-based care.
Course Objectives	<ol style="list-style-type: none"> Provide a comprehensive understanding of the physiological mechanisms underlying diabetes and hypertension. Equip participants with the skills to accurately diagnose and classify diabetes and hypertension using established criteria. Teach participants how to interpret relevant diagnostic tests to guide clinical decisions. Develop the ability to assess and select appropriate pharmacological interventions for managing lifestyle diseases. Train participants to monitor and optimize medication regimens for patients with diabetes and hypertension. Prepare participants to identify and manage common complications and comorbidities associated with diabetes and hypertension.
Learning Outcomes	<p>At the end of this microcourse, the students should be able to:</p> <ol style="list-style-type: none"> Explain the mechanisms underlying diabetes and hypertension. Identify the diagnostic criteria and classification systems for diabetes and hypertension. Identify common complications and comorbidities.



	<ol style="list-style-type: none"> Evaluate pharmacological treatments for diabetes and hypertension. Design methods to enhance the effectiveness of medication schedules
Mode of Delivery	Online via UPOU's Non-formal Courses Platform (nfc.upou.edu.ph)
Duration	2 weeks

Course Name	Lifestyle Interventions in Disease Management
Synopsis	This microcourse provides a detailed exploration of lifestyle interventions critical to the prevention and management of chronic diseases, with a focus on nutrition and physical activity. Designed for healthcare professionals, wellness coaches, and nutritionists, this course equips participants with practical strategies to promote healthier living through diet and exercise, ultimately aiming to improve patient outcomes and enhance quality of life.
Course Objectives	<ol style="list-style-type: none"> Provide a thorough understanding of the role of nutrition in the prevention and management of chronic diseases. Equip participants with the knowledge to offer evidence-based dietary recommendations for managing chronic diseases. Develop strategies to effectively promote healthier eating habits among patients. Emphasize the importance of physical activity in managing chronic diseases. Teach participants to design personalized exercise plans tailored to individual patient needs. Train participants to help patients incorporate physical activity into their daily routines.
Learning Outcomes	<p>At the end of the microcourse, the students should be able to:</p> <ol style="list-style-type: none"> Explain how nutrition influences chronic disease prevention and management. Preparing evidence-based dietary guidance personalized to individual patient needs. Develop effective strategies to encourage sustained adoption of healthier eating habits. Articulate the critical role of physical activity in disease management.



	<ol style="list-style-type: none"> Create tailored exercise regimens considering patient-specific needs and conditions. Facilitate patients in incorporating physical activity seamlessly into their daily routines.
Mode of Delivery	Online via UPOU's Non-formal Courses Platform (nfc.upou.edu.ph)
Duration	2 weeks

Course Name	Patient-Centered Care and Holistic Approach
Synopsis	This microcourse is designed to provide healthcare professionals with the tools and strategies necessary to implement patient-centered care and a holistic approach in managing chronic diseases. The course emphasizes the importance of behavior change, patient engagement, and integrated care to enhance patient outcomes and overall well-being.
Course Objectives	<ol style="list-style-type: none"> Develop effective strategies for guiding behavior change in patients. Learn techniques to motivate and engage patients in their healthcare. Improve patient adherence to treatment plans and lifestyle changes. Work effectively in interdisciplinary teams to provide comprehensive care. Recognize and address mental health and social aspects impacting patient well-being. Adapt care delivery to accommodate diverse cultural and socioeconomic backgrounds.
Learning Outcomes	<p>At the end of the microcourse, the students should be able to:</p> <ol style="list-style-type: none"> Identify strategies for behavior change and patient engagement Analyze the importance of interdisciplinary collaboration in healthcare. Apply methods to enhance patient adherence to treatment plans. Evaluate mental health influences on patient well-being. Develop culturally sensitive care plans for diverse populations.
Mode of Delivery	Online via UPOU's Non-formal Courses Platform (nfc.upou.edu.ph)
Duration	2 weeks

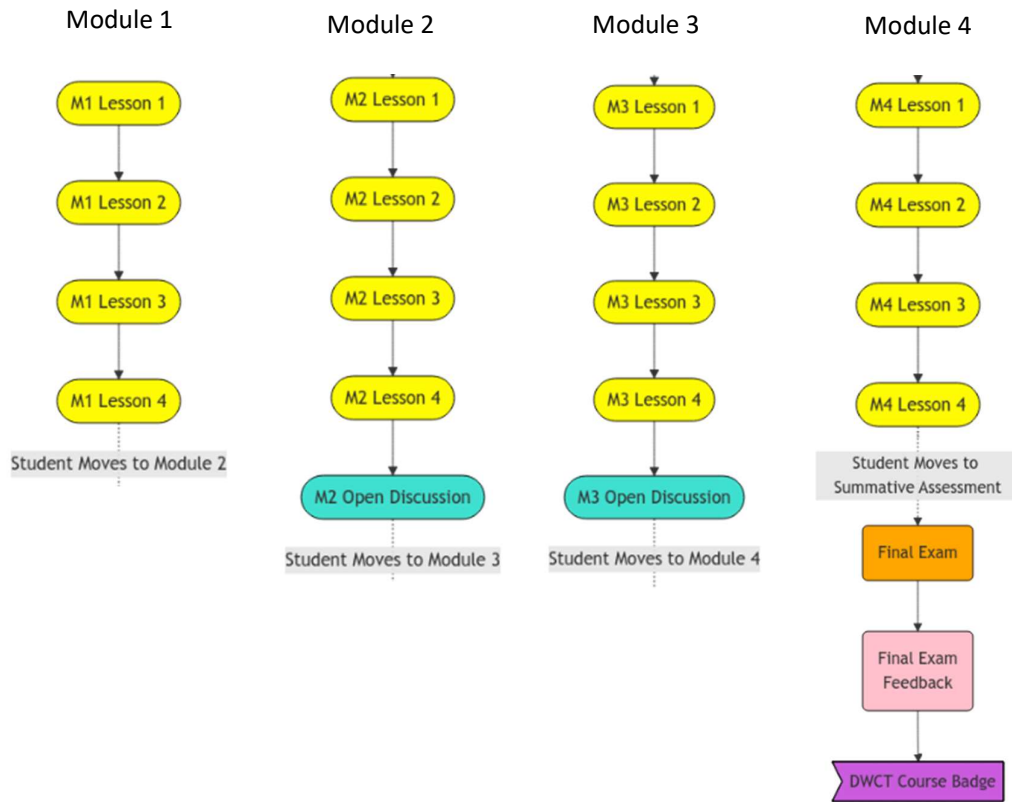


Figure 11: CoDe-Graph for Microcredential Courses Offered by University of the Philippines Open University and Ateneo De Manila University (Join courses)