100K X 12 UNITS

INCOPORATING MULTI MEDIA 30K

PILOTING AND TESTING 10 PER

UPLOADING AND CONFIGURATION

10 PERCENT

PEER REVIEW

NEED ASSESSMENT 10

A brief description/background to the content development, content validation, digitization and uploading for a masters in Information Technology course having 12 course modules in technical university of Mombasa. The course is already being taught online but the content needs to be upgraded

that I want to undertake, and activities and progress that I have made since my original SFPK project(s) ended (1-2 paragraphs)

The **Master's in Information Technology** course at Technical University of Mombasa is a comprehensive online program aimed at equipping students with advanced knowledge and skills in IT. The course, consisting of 12 modules, covers a wide range of topics including Network Security, Software Engineering, Mobile Computing, and Web Application Programming.

As part of the continuous improvement process, the content development, validation, digitization, and uploading activities are being undertaken to ensure that the course remains current, relevant, and aligned with the latest industry standards. The existing content, though functional, requires upgrading to meet the evolving technological landscape and student needs.

**Content Development** involves reviewing and updating the module content to incorporate recent trends, tools, and methodologies in IT. This process also involves enhancing the pedagogical approach to foster deeper understanding and application of concepts.

**Content Validation** is a critical step where subject matter experts rigorously review the updated content to ensure its accuracy, relevance, and alignment with academic and professional standards.

**Digitization** refers to transforming the validated content into digital formats that are interactive, accessible, and engaging for online learners. This includes multimedia resources, assessments, and interactive exercises to enrich the learning experience.

**Uploading** involves integrating the digitized content into the university’s Learning Management System (LMS), ensuring seamless access for students and maintaining a high standard of e-learning delivery. This upgrade enhances the overall effectiveness of the course, making it more dynamic, practical, and engaging for online learners.

The capacity-building project I aim to undertake is focused on advancing postgraduate education in Information Technology, specifically in the domains of Artificial Intelligence, Network and Web Application Security, Software Engineering, and Mobile Computing. The project seeks to develop comprehensive learning modules that incorporate cutting-edge technologies and practices, enhancing students' ability to design secure systems, develop mobile applications, and implement robust software engineering practices. These modules are aligned with revised Bloom’s Taxonomy, promoting higher-order thinking skills, and they incorporate authentic assessments that bridge theoretical knowledge with practical applications.

Since the conclusion of my original SFPK project, I have made significant progress in the design and development of various educational modules. These include content on secure network design, web application security, server-side web programming, human-computer interaction, and mobile application development. The integration of real-world case studies, such as the Trello breach, has enriched the curriculum, and I am in the process of finalizing the content for thesis work on machine learning models to predict suicidal thoughts and behavior. This progress underscores my commitment to providing students with a robust, real-world education that is both relevant and forward-thinking.

To ensure the long-term impact of the capacity-building project at my university, I propose several areas where specialist support and funding would enhance the outcomes and sustainability of our initiatives:

1. **Specialist Support/Training Costs**: Funding would be allocated to bring in industry experts to conduct specialized training for our faculty and students. This includes workshops on advanced AI techniques, cybersecurity protocols, secure software engineering practices, and mobile application development. These trainings will ensure that faculty can continue to teach the most up-to-date methodologies, while students will benefit from the latest industry practices. The rationale is to maintain relevance in a rapidly evolving field, equipping our institution to meet global IT demands.
2. **Software Licensing**: A portion of the funding would cover specialist software subscriptions critical for AI model development (e.g., MATLAB, Python libraries for AI), secure network design, and mobile app development platforms. As these tools are essential for practical learning, a sustainability plan will ensure that we shift to cost-effective alternatives or secure institutional licensing agreements beyond the project period.
3. **Workshops and Networking**: We plan to organize a series of workshops and skills-sharing events to bring together academic peers, industry professionals, and students for networking and training. This will create a collaborative environment for knowledge exchange and foster long-term partnerships that can provide ongoing support and opportunities.
4. **In-country Consultants**: In-country experts would be engaged to provide tailored consultancy services in areas such as curriculum development, AI integration, and data security implementation. Their expertise will help us refine and localize our curriculum to meet both national and international standards.
5. **Researcher Support**: Funding would be allocated for researchers to conduct impact evaluation through interviews, data collection, and analysis with students and faculty members. This will help in measuring the effectiveness of the modules and overall project. The research will guide adjustments to the curriculum and ensure that the capacity-building initiatives are achieving their intended outcomes.

All costs would be carefully outlined to ensure transparency and demonstrate a clear connection between the expenditure and the long-term success of the project. For example, researcher time would be projected at 3 months for data collection and analysis, while software costs would be projected based on a 12-month license.

An brief plan of action for our work together, duration and timeline (bullet points)

**Plan of Action for Capacity Building Project (January 2025 - December 2025)**

**January - February 2025: Initial Setup and Planning**

* Establish project goals, detailed timeline, and roles for collaboration.
* Identify key faculty and researchers involved in curriculum enhancement and training.
* Finalize the list of required specialist software, training needs, and external consultants.
* Begin procurement process for specialist software and set up any necessary licenses.

**March - April 2025: Specialist Training and Workshops**

* Conduct specialist training sessions for faculty on AI, cybersecurity, and mobile application development.
* Host initial networking and skill-sharing workshops for faculty and students.
* Engage in-country consultants for curriculum review and enhancement in targeted areas (e.g., secure network design, AI integration).

**May - June 2025: Curriculum Implementation and Pilot Testing**

* Begin the pilot rollout of enhanced modules across postgraduate IT courses (AI, cybersecurity, software engineering, etc.).
* Incorporate practical lab sessions using newly procured software for AI, network security, and mobile app development.
* Start conducting interviews and data collection for impact evaluation with students and faculty.

**July - August 2025: Evaluation and Refinement**

* Conduct mid-project review with collaborators to assess progress and initial outcomes of the pilot programs.
* Analyze feedback from students and faculty; make necessary adjustments to curriculum and teaching methods.
* Continue data collection and refine impact evaluation metrics based on initial results.

**September - October 2025: Scaling and Knowledge Sharing**

* Scale successful module enhancements across broader IT programs and courses.
* Organize advanced workshops and collaborative sessions to solidify learning and skills.
* Host networking events to share progress, lessons learned, and gather external insights for further improvements.

**November 2025: Final Evaluation and Reporting**

* Complete the impact evaluation, compiling data and insights on student outcomes, curriculum effectiveness, and faculty development.
* Finalize and submit comprehensive project reports, including recommendations for future capacity-building efforts.

**December 2025: Sustainability and Wrap-up**

* Present a sustainability plan for ongoing use of specialist software and continued faculty development.
* Host a final workshop/event to celebrate project achievements and solidify partnerships for continued collaboration.
* Wrap-up project activities, ensuring knowledge transfer and long-term strategy implementation.

This plan ensures a structured approach, with key milestones aligned to ensure maximum impact and long-term sustainability.

A brief description of potential outputs. (1 paragraph)

The potential outputs of this capacity-building project include enhanced postgraduate IT curricula with updated and industry-relevant modules in areas such as Artificial Intelligence, Network and Web Application Security, and Mobile Computing. These modules will be supplemented with practical training using specialist software, ensuring students develop hands-on skills in AI model development, secure software design, and mobile application programming. Additionally, the project will produce a series of workshops, networking events, and skill-sharing sessions that foster collaboration between academia and industry. The impact evaluation will generate detailed reports on the effectiveness of the curriculum enhancements, providing a framework for continuous improvement and a roadmap for sustainable education practices in the long term. These outputs will position the university as a leader in IT education and workforce development.