



TUMAINI UNIVERSITY MAKUMIRA

A PROJECT PROPOSAL FOR ESTABLISHING ONLINE/BLENDED LEARNING PROGRAMMES AT TUMAINI UNIVERSITY MAKUMIRA (TUMA)

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Abbreviations and Acronyms

ICT	Information and Communication Technology
LMS	Learning Management System
RSP	Rolling Strategic Plan
TCU	Tanzania Commission for Universities
TUMA	Tumaini University Makumira

Executive Summary

This proposal seeks funding to upgrade TUMA's core network infrastructure and establish a Moodle Learning Management System for delivering online and blended learning courses at TUMA. Consistent with TUMA Five-Year Rolling Strategic Plan 2023/24-2027/28, a combination of face-to-face and online and blended learning programmes is anticipated to significantly increase student enrolment from 2629 at present to 8000 students by 2027/28, thereby enabling the university to contribute more significantly to the socio-economic development of society by producing impactful graduates with higher knowledge and skills. Other expected project outcomes and outputs are:

- a) A reliable core network infrastructure that supports not only the online/blended delivery programme operations of LMS but also other systems.
- b) A functioning LMS.
- c) Online/blended delivery curricula covering various courses in each faculty.
- d) Increased skills among the ICT technical staff in developing online/blended delivery programmes.
- e) Gained skills among the academic staff in designing and running online/blended courses.
- f) Gained skills among students in using LMS for learning and communication.
- g) Increased effectiveness and efficiency of the face-to-face mode of delivery due to a reliable core network infrastructure.

Through its Information and Technology Department, TUMA has the capacity in terms of qualified personnel to execute the project while ensuring the sustainability and progress of online and blended learning programmes. The anticipated budget is \$280,363.

1. Rationale and Context

Consistent with its Five-Year Rolling Strategic Plan (RSP) 2023/24-2027/28 and its mission, which is to provide education, focusing on teaching and learning, innovative and impactful research, and public service for sustainable social and economic development, Tumaini University Makumira (TUMA) aspires to grow sustainably to become a leading Christ-centred academic institution for needs-driven generation, consumption, propagation, and continuation of knowledge and skills for holistic development and wellbeing of humankind and the environment (TUMA, 2023). One trajectory of growth is expected to be realised by addressing one of the RSP targets, which is to increase student enrolment from the current 2629 to 8000 students by 2028 in regular programmes and to enrol 2000 short-course students by the same year. Apart from its efforts, including diversifying face-to-face delivery programmes to attract more applicants, TUMA is committed to achieving its target of increasing student enrolment by developing and implementing online/blended learning programmes.

Online/blended delivery programmes are expected to attract a large number of students due to the advantages they offer, including allowing students to study flexibly, working while studying, learning at their own pace, and paying less compared to face-to-face programmes. By increasing student enrolment, TUMA will contribute to an increased national enrolment rate, which currently stands at 6.1%, far below the average rate in the sub-Saharan region (e.g., 9% in 2024) and globally (e.g., 40.35% in 2024), thereby contributing significantly to the country's socio-economic development efforts by producing an increased number of graduates with competencies needed in the job market.

TUMA will not be the first university in Tanzania to increase its student enrolment by adding online/blended delivery programmes. Other universities with such programmes include the Open University of Tanzania, the University of Dar es Salaam, Mbeya University of Science and Technology, and Mzumbe University. These and other universities have set up ICT infrastructure to facilitate online and blended teaching and learning, without compromising the value and quality of education based on national qualifications standards, and job market requirements nationally and internationally (Tanzania Commission for Universities, 2021). These initiatives are taken with the understanding that the adoption of ICT in teaching and learning offers the potential not only to improve access to higher education but also to provide quality education more efficiently (Ministry of Education, Science and Technology, 2025). Thus, TUMA has an advantage of drawing on experiences from other universities in executing its online/blended learning project.

2. Requirements for the Online/Blended Learning Programmes

The effective and efficient implementation of online or blended learning programmes is possible when there is a reliable core network infrastructure with the capacity to handle large amounts of online traffic. The core network infrastructure at TUMA, established over two decades ago, is now exhausted, leading to data losses and the inability to transfer large amounts of data, as well as support the functions of complex systems like LMS. Based on TCU requirements (TCU, 2022), the infrastructure should be upgraded (a) to allow students and staff to have access to

speedy and reliable internet connectivity (via a robust Local Area Network (LAN), wireless hotspots, etc), and (b) to support the implementation of an LMS, which should be accessible 24 hours a day. The type of LMS preferred at TUMA is Moodle.

3. Capacity and Quality Standards of the Moodle LMS

Based on TCU quality requirements, the Moodle LMS, upon customisation, will, among others:

- a) Facilitate interactions between students and staff, and among students.
- b) Support various assessment activities such as designing and administering assignments and tests, and recording students' activities and performances.
- c) Be responsive to the use of any device, including small-screen devices (e.g., smartphones and tablets).
- d) Be accessible to all operating systems, including IOS and Android mobile apps.
- e) Facilitate learning, communication and collaboration activities.
- f) Have learning analytics tools that enable administrators to generate various reports for managerial and decision-making purposes.
- g) Allow access to the online environment when connectivity is not available and synchronise later when connectivity is available.
- h) Provide a dashboard for tracking students' learning progress (i.e., where students are, relative to expected learning outcomes) and what they need to do to achieve the outcomes.

The system, where appropriate, will be integrated into other existing systems (e.g., registration system, examinations management system, and plagiarism system) to share data within the university. Also, a multimedia studio for designing and recording online courses will be integrated into the Learning Management System.

4. Project Description and Beneficiaries

The objective of this project stems from the TUMA RSP strategic objective, which is to increase student enrolment from 2,629 at present to 8,000 students in regular programmes and 2,000 students in short-course programmes by establishing and managing online and blended learning programmes. The online and blended learning programmes will target learners in regular degree and non-degree programmes, and those in short-course programmes.

5. Expected Project Outcomes and Outputs

- a) Increased number of beneficiaries of higher education delivered by TUMA.
- b) A reliable core network infrastructure that supports not only the online/blended delivery programme operations of LMS but also other systems.
- c) A functioning LMS.
- d) Online/blended delivery curricula covering various courses in each faculty.
- e) Increased skills among the ICT technical staff in developing online/blended delivery programmes.
- f) Gained skills among the academic staff in designing and running online/blended courses.
- g) Gained skills among students in using LMS for learning and communication.

- h) Increased effectiveness and efficiency of the face-to-face mode of delivery due to a reliable core network infrastructure.

6. Activity Plans

a) Upgrading the core network infrastructure

S/N	ACTIVITY	YEAR 2025				YEAR 2026			
		April/ June	July/ Aug.	Sept/ Oct.	Nov/ Dec	Jan/ Feb	March/ April	May/ June	July
1	Assessment of network requirements as per TUMA RSP								
2	Designing the core network infrastructure (with flexibility for future growth)								
3	Developing a plan for implementing the design								
4	Developing a monitoring and maintenance plan								
5	Implementing the plans: Phase 1								
6	Implementing the plans: Phase 2								
7	Implementing the plans: Phase 3								
8	Implementing the plans: Phase 4								

b) Setting up a Learning Management System (Moodle type)

S/N	ACTIVITY	YEAR 2025								
		April	May	June	July	Aug	Sept	Oct	Nov	Dec
1	Defining the scope (including the needed resources, tasks, expected outcomes, and timelines)									
2	Preparing a plan (i.e., what will be done, when and how)									

3	Developing the Learning Management System									
4	Establish a multimedia studio for designing and recording online courses									
5	Develop online/blended curricula based on TCU guidelines									
6	Creating a mechanism for encouraging user feedback and tracking learning progress									
7	Training staff and students on the use of LMS in teaching and learning, and the multimedia studio									
8	Launching the system									

7. Budget

S/N	EQUIPMENT/ACTIVITY	COST (in US Dollars)
1	Purchasing hardware and software equipment for upgrading the core network infrastructure*	98,535
2	Purchasing equipment for setting up the Moodle Learning Management System and a Multimedia Studio*	164,334
3	Developing online/blended curricula	16,694
4	Training staff and students on the use of LMS	800
TOTAL		280,363

*A detailed equipment budget is in Appendix 1.

8. Sustainability Plan

After completion of the project, TUMA's Information Technology Department will perform regular maintenance through regular repairs and updates of the core network infrastructure, the

LMS, and associated hardware and software equipment. Also, TUMA will train the technical and academic staff regularly on the use of LMS in teaching and learning. These activities will be performed using resources available at the university.

9. Monitoring and Evaluation

During the project period, the university, through its Information Technology Department, will make frequent follow-ups to ensure the project plan is implemented within the timeframe. After the project period, the Information Technology Department will conduct regular check-ups by collecting and analysing information on the condition of the core network infrastructure and the software and hardware that support LMS. The Department will use the information and take necessary measures based on it. Additionally, faculties, academic departments, the Quality Assurance Office and its units operating in faculties will conduct regular evaluations of the online/blended programmes based on TCU guidelines and take action where applicable.

10. Conclusion

TUMA prefers the Moodle type of LMS because it is designed to be customisable to suit the university's needs. By setting up and implementing the System, TUMA anticipates increasing student enrolment through the effective use of its online and blended learning programmes.

References

- Ministry of Education, Science and Technology (2025). *Education Sector Development Plan 2025/26-2029/30*. Dar es Salaam.
- Tanzania Commission for Universities (2022). *Guidelines for online and blended delivery modes of courses for university institutions in Tanzania*. Dar es Salaam.
- Tumaini University Makumira (2023). *Five Year Rolling Strategic Plan*. Arusha.

Appendix 1. Detailed Equipment Budget

a) Core Network Infrastructure

Cisco equipment suitable for a medium-sized college setup (8,000 users), along with estimated prices (based on recent market averages). Note: Prices can vary significantly depending on the region, vendor, and licensing bundles; these are approximate estimates (in USD).

Device Type	Suggested Cisco Model	Description	Estimated Price (USD)	Amount (\$)	QTY	Total
Core Router / Layer 3 Switch	Cisco Catalyst 9500-24Y4C	High-performance core routing and Layer 3 switch (modular uplinks)	8,000 – 12,000	12000	1	12000
Firewall / UTM	Cisco Firepower 1120	Entry-level NGFW with threat defense, URL filtering, IPS	1,500 – 3,000	3000	1	3000
Wireless LAN Controller (WLC)	Cisco Catalyst 9800-L	Supports up to 250 APs; ideal for centralized WLAN management	3,500 – 5,000	5000	1	5000
Access Points (x50 units)	Cisco Catalyst 9115AXI	Wi-Fi 6, APs with high performance and security	400 – 600 each	600	50	30000
Building Distribution Switch	Cisco Catalyst 9300-48T-E	Stackable, Layer 3 switch, supports VLANs, QoS, etc.	4,000 – 9,000 each	9000	3	27000
Access Switch (optional)	Cisco Catalyst 9200-24P-E	PoE+ support, great for connecting endpoints and APs	2,000 – 3,500 each	3500	1	3500

Network Access Control (NAC)	Cisco ISE (virtual or appliance)	Identity Services Engine for user/device policy control	4,000+ (license-based)	4000	1	4000
Monitoring Software	Cisco Prime Infrastructure / SolarWinds	For real-time monitoring and network management	3,000+ (depends on size)	3000	1	3000
RADIUS Server	Cisco Secure ACS / Windows Server	For integrating with AD for authentication	Varies (Windows: ~800+)	800	1	800
Total						88,300.00

Below is a structured list of network infrastructure accessories arranged in phases, based on their role:

Phase 1: Core Infrastructure Accessories

Accessory	Quantity	Estimated Price (USD)	Purpose	Amount (\$)	QTY	Total
72U Server Rack (floor-standing)	1	800 - 1,200	Housing core network equipment	1200	1	1200
Fiber Patch Panel (24-port LC)	2	150 - 250 each	Termination point for building fiber links	250	2	500
UTP Patch Panel (48-port Cat6)	2	100 - 150 each	Cable management for UTP patch cables	150	2	300
Fiber Patch Cables (LC-LC, SM, 3m)	10 -15	10 - 15 each	Connections between fiber patch panel & SFPs	15	15	225

UTP Patch Cables (Cat6, 1 - 3m)	50 - 100	2 - 5 each	Switch-to-patch panel / device cabling	5	100	500
Cable Trunking (PVC 100mm)	~15 meters	5 - 8 per meter	Tidy, safe routing of cables in 3x5m room	8	15	120
Air Conditioner (Server Room, 2 - 3kW)	1	1,200 - 2,000	Keeps equipment cool 24/7	2000	1	2000

Phase 2: Wireless & Access Layer Accessories

Accessory	Quantity	Estimated Price (USD)	Purpose	Amount(\$)	QTY	Total(\$)
UTP Patch Panel (24-port, Cat6)	5 (1 per building)	100 each	Patch panel for access switches	100	5	500
UTP Patch Cables (Cat6, 1 - 3m)	200 - 300	2 - 5 each	APs, staff PCs, VoIP phones, etc.	5	300	1500
Additional Cable Trunking	~30 meters	5 - 8 per meter	AP cable routing, where needed	8	30	240

Phase 3: Security & Control Accessories

Accessory	Quantity	Estimated Price (USD)	Purpose	Amount	QTY	Total (\$)
CCTV IP Cameras (Indoor, PoE)	6	80 - 150 each	Server room and access monitoring	150	6	900
NVR (8-channel, PoE switch built-in)	1	300 - 600	Stores video footage	600	1	600

Fingerprint Biometric Access Control	2	300 - 600	Restrict access to server room	600	2	1200
Magnetic Door Lock + Accessories	2set	100 - 150	Works with biometric unit	150	2	300
Backup Power for Security Devices (UPS 600VA)	1	100 - 150	Keeps cameras and biometric online during outage	150	1	150
Grand Total for core infrastructure accessories for phase 1, 2 and 3						10,235.00

Grand Total	\$88,300.00 + \$10,235.00 = \$98,535
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THE GRAND TOTAL FOR INTERNAL CORE NETWORK INFRASTRUCTURE = \$ 98,535.00

b) Budget for equipment and activities for setting up the Moodle Learning Management System and a Multimedia Studio

N O	DEVICE NAME	DEVICE USAGE	SPECIFICATION	PRICE (\$)
1.	Computer	Computer is the backbone of the content creation setup, handling everything from recording to editing and streaming. For demanding tasks like 4K video editing or streaming, a powerful desktop or custom- built PC with a strong CPU and GPU is ideal. If you need portability, gaming or high-performance laptops offer a good balance between power and mobility.	Processor Intel Core i7 13th Gen. Graphics Processing Type Integrated/On-Board Graphics RAM Size 32 GB Color Black SSD Capacity 2TB GPU Intel UHD Graphics Processor Speed Up to 5.20GHz Brand Dell Series 7000 Maximum RAM Capacity 64GB Connectivity HDMI, USB 2.0, USB 3.0, USB 3.1, USB-C, DisplayPort Operating System Windows 11 Pro Hard Drive Capacity 2TB	2,141.43
2.	Camera	To capture the vision. Action Cameras: If the content involves movement, consider an action camera like the GoPro for its durability and versatility Lens 4K-50		798.00

3.	Tripod & Stabilizer	✓ To Steady Your Shots ✓ A good tripod or stabilizer is crucial for capturing steady, professional-looking footage. A basic tripod will keep your camera steady and is easy to set up. It is ideal for stationary shots. For smooth, dynamic, cinematic shots, a gimbal/stabilizer can stabilize your camera, even during movement, elevating your visual narrative.		237.00
4.	Lighting	✓ Illuminate Your Content ✓ Proper lighting can transform your video, making it look more professional and engaging. Here's what you'll need:		
		Ring Lights: Popular among beauty vloggers and streamers, ring lights provide even, flattering light. Neewer has quite some choices to offer.		49.00
		Softbox Lighting: For more extensive setups, softbox lights provide softer, more natural lighting that reduces shadows. Torjim is one of the best sellers on Amazon.		62.00
		LED Panels: Portable and versatile, LED panels are great for on-the-go filming or as supplementary lighting. Aputure has a wide range of selection.		139.00
5.	Microphone	✓ Crisp, Clear Audio ✓ Good audio is just as important as video quality. Viewers might forgive visuals that could be	Shure SM7dB Dynamic Vocal Microphone w/Built- in Preamp for Streaming, Podcast, & Recording, Wide-Range Frequency,	483.12

		better, but poor audio will likely drive them away. Here are a few options: XLR Microphones:For a more professional setup, consider an XLR microphone. While more expensive and requiring an audio interface, the sound quality is unmatched. Check out the AVerMedia dynamic body cardioid XLR microphone AM330 Live Streamer Mic, which has an all-metal for better acoustics.	Warm & Smooth Sound, Rugged Construction, Detachable Windscreen - Black	
6.	Headphones		Shwe SRH1540	549.00
7.	Capture Card:	✓ Stream and Record with Ease ✓ A capture card is essential for those looking to record or stream content from external devices like gaming consoles, DSLR/mirrorless cameras, or another PC. AVerMedia, being the capture card expert, has a wide selection to offer.	IK Multimedia TONEX Capture all-in-one DI box, reamp box, and Tone Model creation system	199.99
8.	Electronic writing pad	provides more accessible modes for researching, thinking, capturing, writing, and sharing	HUION Note 2-in-1 Digital Notebook Drawing Tablet With Battery-free Pen, Bluetooth Wireless Paper Tablet Electronic Writing Pad for Note-taking, Digital Art & Meeting, Refillable A5 Notepad, 9.5x7inch	119.99

9.	Air conditioning	Used to keep servers cool and running efficiently. It ensures that it is always at the ideal temperature for optimum performance.	Daikin Air Conditioner Wall Mount Split Unit with Inverter	526.41
10.	Power Backup	To provide a continuous power supply if a primary source (such as mains electricity) suddenly becomes unavailable.		
11.	Server	Hosting an e-learning platform		2,970.00
12.	Strong Internet Connection			
13.	Carpet	To prevent the buildup of static charges since Carpet is an Antistatic material		600.00
14.	Human Resource	Responsible personnel for Content Creation/Editing		
15.	Training			
16.	Acoustic treatment	To absorb or diffuse sound waves and reduce unwanted reflections.		1,113.00
17.	Software:	Moodle- Software for e-learning purposes		-
		Riverside.fm-3.12.1		288.00
		Creative Cloud All Apps (Adobe)	Subscription per month	36.00
		Zoom- software for video conferencing	per month	21.99
18.	Computers	Computers for e-learning classes for students	-Intel Core™ i5+ -RAM 8+ GB -512+ SSD -Windows OS 11pro (Office \$120 + OS \$75)	154,000.00
	Total			164,333

