



# ICTO ANNUAL REPORT 2025

<https://icto.um.edu.mo>

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# Words from Director

In an era of rapid technological change, our mission remains clear: to empower teaching, learning, research, and administration through secure, reliable, and forward-looking ICT solutions.

This year, we launched new e-services, expanded AI capabilities, delivered critical infrastructure upgrades and enhanced cybersecurity. Key initiatives included the introduction of new services in UM App, new self-services and payment services for students, new verification system for offer of admission, new digital expense claims system, new recruitment system and new laboratory chemical control system. These directly support our operational goals and improve efficiency across campus. In teaching, we introduced AI-powered text generation tool within UMMoodle. Additionally, we deployed small-scale, locally hosted distilled models of DeepSeek and Gemma to support on-campus AI experimentation. We also completed the final phase of our wired and wireless network modernization, upgrading facility network speed from 100 Mbps to 1 Gbps and adopting WiFi-7 technology to provide every student hostel room with a dedicated access point. To support the connectivity with Hengqin Transitional Research and Education Site, we implemented an International Private Leased Circuit (IPLC) and International Internet access. In terms of cybersecurity, we deployed DDoS protection service and enhanced network access control lists (ACLs). Last but not least, we upgraded over 600 desktop and notebook computers for staff.

None of this would have been possible without the collaboration of university members. Your feedback and engagement continue to guide our priorities and inspire our progress. I extend my sincere appreciation to all who have contributed to our progress this year.

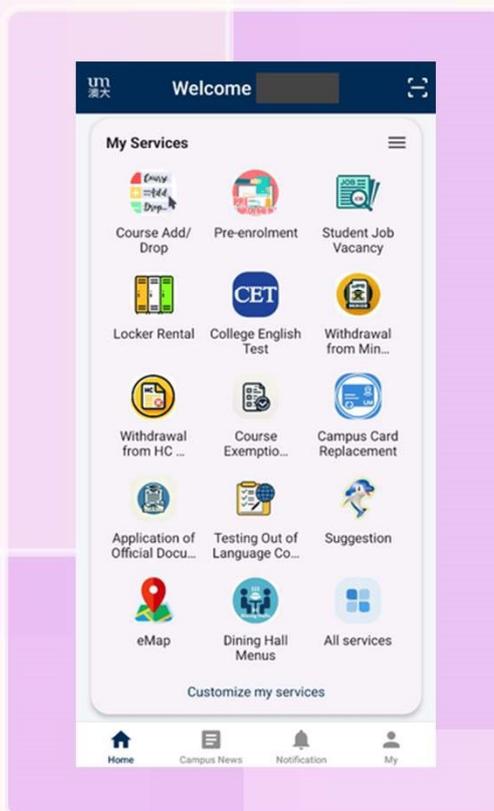
# UM App

This year, the UM App has expanded to include **37 services** designed to support both the academic needs and daily convenience of UM users. To date, the app has been installed **over 31,000 times**, reflecting an increase of approximately **17,000 new users** within the past year.

The following new services have been introduced:

## Academic Services

- *Application for Official Documents*
- *Course Add/Drop, Pre-enrolment*
- *Course Exemption/Waiver*
- *Withdrawal from Minor and HC Programmes*
- *Personal Class Schedule*



## General Services

- *Banner Notifications*
- *Dining Hall Menus*
- *eMap*
- *Jabber integration with Phonebook*
- *Shortcut for QR Access*
- *Suggestion Scheme*

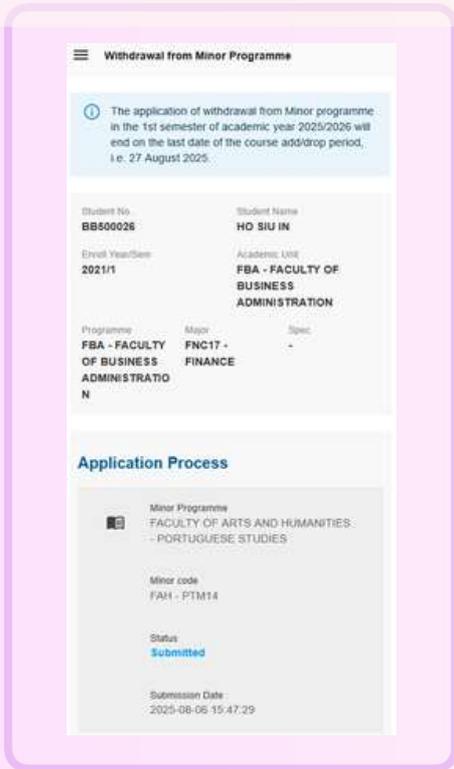
## Student Life Services

- *Campus Card Replacement*
- *Locker Rentals*
- *Student Job Vacancies*

## Language Proficiency Services

- *College English Test*
- *Testing Out of Language Courses*

# New Services for Students

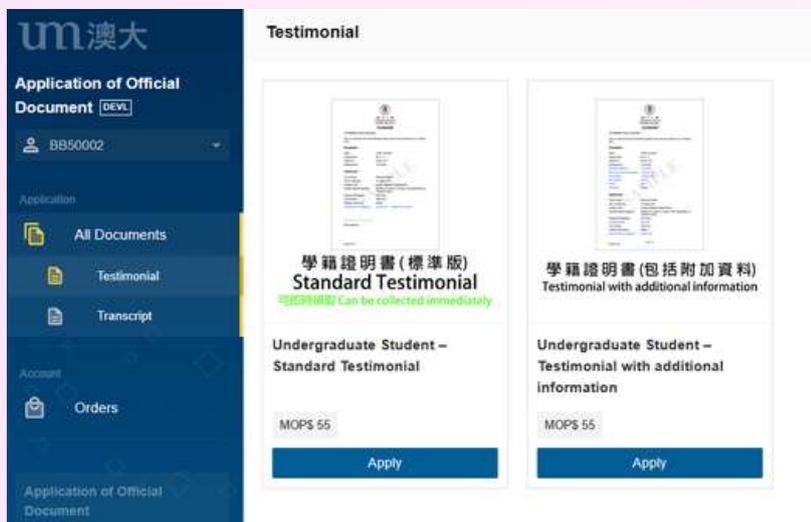


## Self-Services

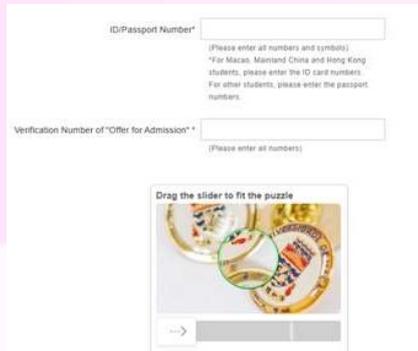
Self-service functions have been introduced on SIWEB and SIAPP to streamline student and administrative workflows. These include applications for withdrawal from minor/HC programmes, course exemption/waiver, and testing out of language courses. Administrators can now process **applications digitally**, reducing paperwork and email communication. The services are also **accessible via the UM App**, allowing students to manage academic matters conveniently on the go.

## Payment Services

These includes applications for **official documents, the College English Test (CET), and admission exam result rechecks**. Processes are streamlined, and Official Document and CET applications are also available in the UM App for convenient mobile access.



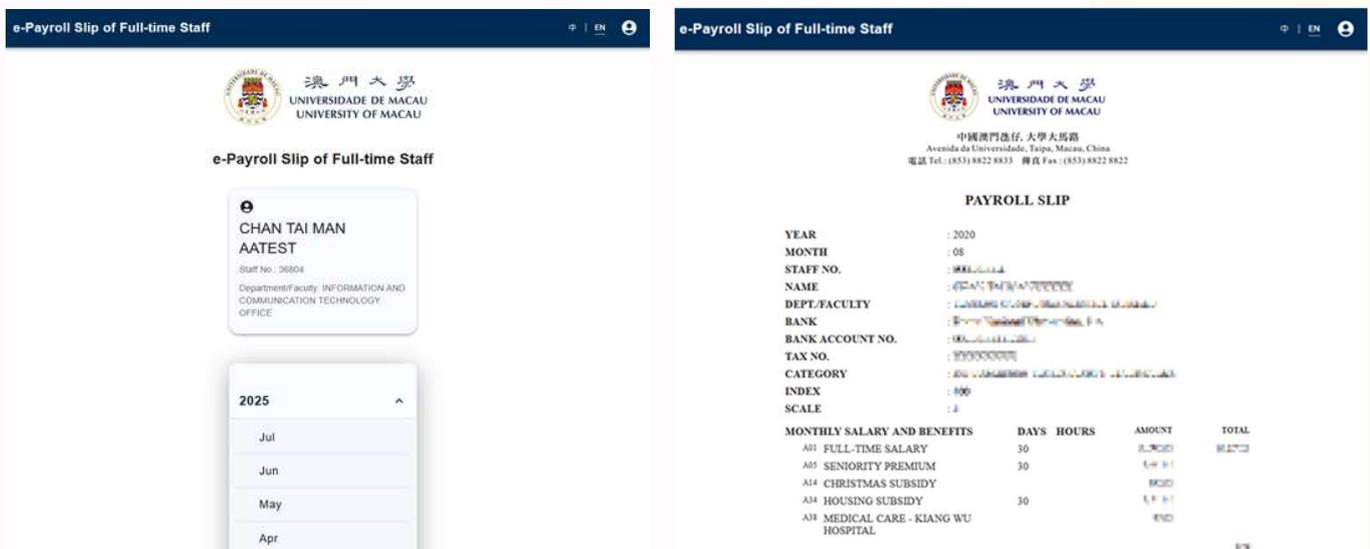
# New Verification System for Offer of Admission



This system helps to **safeguard against fraudulent offer letters** and ensure the integrity of the admissions process.

# New e-Payroll Slip for Full-Time Staff

A redesigned e-Payroll Slip system has been launched, providing full-time staff with convenient access to their payroll information. The system features an **adaptive interface**, ensuring seamless accessibility across desktops, laptops, and mobile devices via web browsers or the UM App. Its intuitive layout allows quick and easy access to payroll slips with a single click.



# New Recruitment System

Reference No.	Department	Position Applied For	Last Modified Date	Action
QA/REFTEST/2025	FACULTY OF ARTS AND HUMANITIES	Assistant Professor of English Literature	10/11/2025	CONTINUE DRAFT
IMS/TESTACAD	FACULTY OF BUSINESS ADMINISTRATION	Assistant Professor (TESTING)	08/08/2025	CONTINUE DRAFT
QA/Acad/2016	FACULTY OF EDUCATION	Test the hidden status for recruitment of academic position	09/05/2025	CONTINUE DRAFT
IMS/TEST1	FACULTY OF BUSINESS ADMINISTRATION	test 1	29/04/2025	CONTINUE DRAFT
IMS/TEST8	INFORMATION AND COMMUNICATION TECHNOLOGY OFFICE	IMS/TEST8 position	28/04/2025	CONTINUE DRAFT
FAH/research/test02/04/2024	FACULTY OF ARTS AND HUMANITIES	FAH/research/test02/04/2024	05/03/2025	CONTINUE DRAFT

The redesigned Recruitment System features a responsive interface optimized for both **desktop and mobile devices**, ensuring a seamless experience across all platforms.

Key improvements include user-friendly enhancements such as **step-by-step application guidance** to simplify navigation through each stage, an application management list for tracking draft and submitted applications, and improved accessibility options to support users with diverse needs.

**Job Applied for**

Faculty: FACULTY OF ARTS AND HUMANITIES  
 Position Type: Academic Position  
 Position: Assistant Professor of English Literature  
 Reference No.: QA/REFTEST/2025

Progress: 1. Personal Information (Completed), 2. Education, Language Ability (Current), 3. Work Experience, 4. Publication, 5. Others, 6. Attachments

**Language Ability**

First Language: Chinese

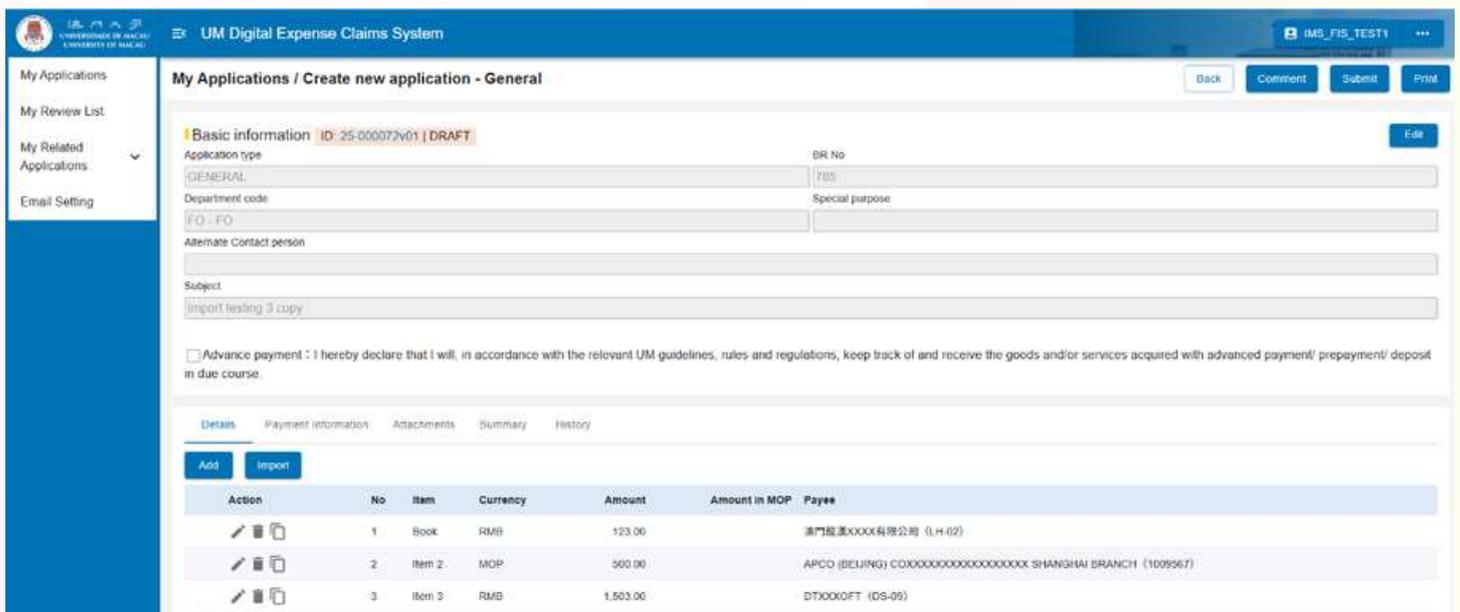
Written: Excellent  
 Spoken: Excellent

These updates aim to improve efficiency, enhance user experience, and deliver a seamless and inclusive application process.

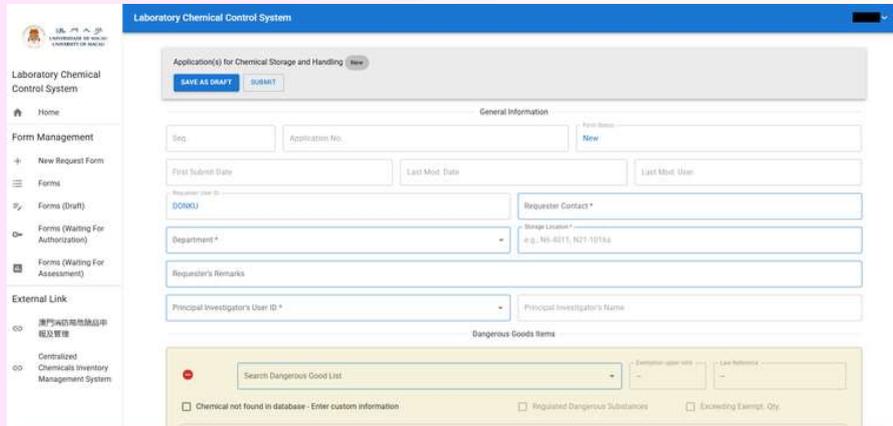
# New Digital Expense Claims System

Phase 1 of the Digital Expense Claims system streamlines the entire process from submission to approval, supporting invoices, official trip expenses, and student stipends. The system offers **real-time tracking and automated notifications** to enhance efficiency.

Phase 2 is currently underway, with plans to expand functionalities based on feedback gathered during the initial phase. This approach aims to deliver greater efficiency, accuracy, and user satisfaction in managing expense claims across all departments.



# New Laboratory Chemical Control System



This new system replaces the existing fragmented process of forms and spreadsheets with an **automated, integrated platform for managing chemical storage**. It streamlines the review and endorsement of chemical and International Maritime Dangerous Goods purchase requests across all faculties and laboratories.

The screenshot displays a table of applications for chemical storage and handling. The table has columns for 'Action', 'Application No.', 'Form Status', 'First Submit Date', 'Department', 'Requester User ID', 'Requester Contact', 'Requester's Remarks', and 'Principal Investigator's User ID'. The status of each application is color-coded: 'Endorsed' (green), 'Waiting for Assess.' (yellow), 'Waiting for Author.' (orange), and 'Waiting for Review' (purple).

Action	Application No.	Form Status	First Submit Date	Department	Requester User ID	Requester Contact	Requester's Remarks	Principal Investigator's User ID
<input type="checkbox"/>	91-0018-25	Endorsed	2025-10-17 11:10:03	ICTO	WIFEONG	8640	Testing	DONKU
<input type="checkbox"/>	91-0017-25	Waiting for Assess.	2025-10-17 10:47:33	ICTO	DONKU	8648		DONKU
<input type="checkbox"/>	90-0004-25	Pending	2025-10-15 12:46:38	HSEO	IML_OA_TEST1	88228234	Internal Reference No.: 133868200978	IML_OA_TEST2
<input type="checkbox"/>	90-0003-25	Endorsed	2025-10-13 16:09:54	HSEO	MANCHAN	88229999	Internal Reference No.: 133868200978	MANCHAN
<input type="checkbox"/>	90-0002-25	Endorsed	2025-10-13 15:44:26	HSEO	IML_OA_TEST2	88229999	R_919fDnsdvtlqpd	MANCHAN
<input type="checkbox"/>	90-0001-25	Endorsed	2025-10-10 09:27:10	HSEO	IML_OA_TEST3	88229999	R_4rvy25Bhmu0XK	IML_OA_TEST2
<input type="checkbox"/>	91-0016-25	Pending	2025-09-30 16:50:13	ICTO	IML_OA_TEST4	33 POLLY CELIA ELINA FERREIRA MATIAS		IML_OA_TEST4
<input type="checkbox"/>	91-0015-25	Waiting for Author.	2025-09-30 16:13:13	ICTO	IML_OA_TEST1	8640		IML_OA_TEST4
<input type="checkbox"/>	91-0014-25	Waiting for Review	2025-09-30 15:21:18	ICTO	IML_OA_TEST1	30-30		IML_OA_TEST4

The screenshot shows the 'Application of Dangerous Goods Review' form. It includes a table for 'Application Details' and a table for 'Dangerous Goods Items'. The 'Application Details' table has columns for 'Application ID', 'Faculty', 'Date of Application', 'Requester', 'Principal Investigator', and 'Storage Location'. The 'Dangerous Goods Items' table has columns for 'Item Code', 'Name of Dangerous Goods', 'CAS No.', 'Qty', 'Packaging Size', 'Exemption Quantity (G/L)', and 'Hazardous Properties'. The form also includes a section for 'Remarks' and a signature area for the Principal Investigator.

Application ID	Faculty	Date of Application	Requester	Principal Investigator	Storage Location
90-0001-25	3BDD	10/30/2025	(86,04,2827)	(86,04,2827)	(86,04,2827)

Item Code	Name of Dangerous Goods	CAS No.	Qty	Packaging Size	Exemption Quantity (G/L)	Hazardous Properties
8130001618	Lead(II) tetraacetate	13001-22-8	2.0	10 (G)	10 (G)	No adverse comment
8130002084	Carbon tetrachloride	7784-17-3	2.0	10 (G)	10 (G)	No adverse comment
8130002036	Lead(II) chloride	7784-89-4	4.0	10 (G)	10 (G)	No adverse comment

The system consolidates Principal Investigator authorization, Faculty Administrator assessment, and final endorsement by HSEO into a cohesive workflow. With centralized data management of dangerous goods, it enhances efficiency through advanced features such as **chemical pattern recognition, automated detection of substances exceeding legal limits, and declaration reminders**. These capabilities collectively strengthen compliance with Macau SAR Government regulations, improving overall safety and regulatory standards.

# Enhancements

## *Student Information Systems*

**Programme & Course Management:** Updated report templates, added PILOs/AILOs for GE programmes and courses, and intake management for PG programmes.

**Postgraduate Progress Reports:** Implemented notifications for students with five or more “Scale 5” grades.

**Course Withdrawal:** Revised logic for course pairing and confirmation.

**Principal’s Recommended Admission (PRA):** Streamlined interview arrangement.

**Panel for Admission System (PAS):** Optimized user interface for application processing.

**Student Feedback Questionnaire (SFQ):** Added GE programme reporting.

**Programme Transfer:** Enhanced grade, transcript, study plan, and graduation check handling between FLL and non-FLL programme transfer.

**Online Check-out:** Added notifications and administrative controls.

**EChannel App:** Integrated SMS templates to support policy compliance for sending messages to Chinese Mainland mobile numbers.

# Human Resources Management Systems

**HR Management System (HRMS):** Digitalized the management of Family Member Card and implemented automatic family member card expiry notifications and automatic reporting for SAFP welfare association membership.

**Recruitment System:** Streamlined reference checks with automated requests and secure submission links. Improved application list layout and system performance.

**e-Leave System:** Expanded delegation roles, integrated new medical institutions for sick leave certification, and refined leave application validation rules.

## Academic Staff Portfolio System (ASPS)

Integrated 5-year FWCI figures into AAR reports via UM Scholars Page synchronization.

5.1 科研成果 / Research Outputs

註 / Remarks  
1. 以下資料截至報告生成日期 / The following data as of report generated date

表格1 / Table 1

	著作出版總量 / Total Number of Publication Items			總引用總量 / Total Citation Number			H-指數 / H-index		
	WOS	Scopus	Google Scholar	WOS	Scopus	Google Scholar	WOS	Scopus	Google Scholar
著作出版總量 / Total Number of Publication Items	653	491	581	7333	9587	11721	44	50	54
過去五年著作出版總量 / Total Number of Publication Items under UM	652	490	580	7333	9586		44	50	

表格2 / Table 2: 總引用指數(FWCI) (數據涵蓋最近5個曆年) / FWCI (data covers the most recent 5 calendar years)

總引用指數(FWCI) (Scholar)	5年平均值 / 5-year average	2025	2024	2023
總引用指數(FWCI) (Scholar)	2.068	2.37	2.93	1.83
總引用指數(FWCI) (Scholar)	2022	2021		
總引用指數(FWCI) (Scholar)	1.09	2.12		

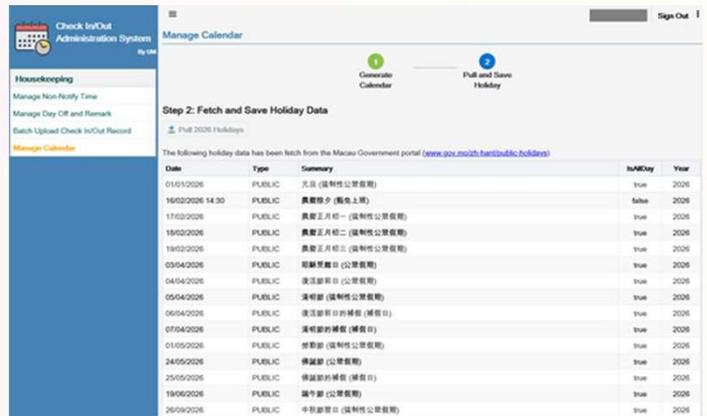
## e-Performance Appraisal System

Digitalized Job-related Goals & Self-Assessment process for administrative staff, reducing paper usage and administrative workload.

# Human Resources Management Systems

## GP Administration System

Implemented a new module for creating yearly calendars and importing Macau holidays, supporting various administrative systems.



## HR Data Synchronization with Assuntos Governamentais (GA / 公務通)

Continued improvements to align with the API upgrades of GA and support new job categories.

## HR Contract Management System

Upgraded system framework version and refined cover letter templates.

## HR Web Service

Established new APIs to provide ceased staff information for streamlined account termination.

## Housing/Family Subsidy Declaration

Upgraded the system for on-demand report generation, profile cloning, and streamlined subsidy record preparation, reducing administration time

## Financial Information Systems



**Financial Information System (FIS):** Implemented queue-mode processing for high-volume Journal Voucher uploads and migrated reports to the centralized Report Server for improved resource utilization.



**Account Payable System (AP):** Added logic for professional tax calculations and enhanced payee information validation rules.



**Budgeting System (BGT):** Improved data posting to the DSF Finançes Inteligentes system with automated calculations and manual review options.



**Payment Gateway Bridge (PGB):** Improved GovPay payment reliability with proactive transaction verification and implemented direct refund processing via the GovPay API.



**Student Account Module (SAM):** Enhanced tuition fee settlement tracking with cumulative payment and outstanding balance displays, migrated reports to the centralized Report Server, and updated debit note generation to reflect new refund policies.

ISSAM1111 - Student Enquiry

Student: Student Account Search

Student No: C000228 Search Refresh

Personal Info / Personal Detail Status: Major / Minor / FE

Profile: A ID No: 112245171 IC Code: Tuition Book: P  
 Student No: C000228 ID Type: 1 Tuition Book: P  
 Student Name: CHOI AMBER 2 ID Place: S1 Admission Year: 2022

Student's Classes Here

Personal Enquiry

Stod No.	Charge Plan Type	Programme Group	Major/Minor Group	Issued PB Tuition Charges	Settled PB Tuition Charges	Student Current Tuition Semester No.	Student Settled Tuition Semester No.	Max Installment	Paid Tuition Amount	Commission Amount	Projected Unpaid Tuition Balance
C000228	TUTORIAL_FEE	FAH	CLL	2	2	2	2	2	20,000.00	0.00	0,000.00
C000228	TUTORIAL_FEE	FAH	ISA	2	1	2	1	2	4,500.00	0.00	8,500.00

BankBook Change Print

View - Export to Excel

Student No.	Academic Period	Transaction Date	Transaction Type	Transaction Code	From Transaction ID	From Batch No	Debit/Credit Sign	Amount	Current Balance	Description
C000228	2022/3	2022/02/19	CHARGE	DUECHG	174958		+	20.00	2,879.06	OVERDUE CHARGE \$20/DAY OR 3% WHICHEVER THE LEAST

*New enquiry function for tracking of student's tuition fee settlement status across the entire study programme*

## Procurement Systems

**eProcurement System:** Based on internal audit recommendations, strengthening procurement governance through interface refinements, centralized templates, expanded notifications, and embedded compliance prompts. Improved reporting provides timely access to PR data for asset management. Streamlined supplier registration and management with enhanced workflow, document control, and compliance monitoring for M8 document exemptions.

The screenshot displays a web-based form for supplier registration. At the top, there is a navigation bar with buttons for 'Disable Edit', 'Save', 'Show Printable', 'Reviewed and Submit', 'Approve', 'Back for Resubmit', 'Reject', 'Collapse All', 'Change Request History', 'Documents History', and 'Close'. Below this, the form includes fields for 'Supplier Code' (213), 'Old Supplier Code', and 'Registration Approval Date' (09/06/2025). A 'Status' dropdown is set to 'Active', and a 'Remark' field contains two entries: '這個很好, 多貼幫補1' and '這個很好, 多貼幫補2'. The 'User Name' is 'CELIA052' and the 'Registered Email' is 'celia052@um.edu.mo'. A section titled 'Profile Documents(M1, M8, BR, Cooperative, Acknowledgement, Email Correspondence, Website Information)' contains an 'Add' button and a table with the following data:

Verified	Document Type	Document	Remark	Upload Date	Expiry Date
<input checked="" type="checkbox"/>	Business Registration / Relevant Certificate	BR.pdf		09/06/2025 10:41:49	non-expiry
<input checked="" type="checkbox"/>	Business Tax - Tax Demand Note (M8)	M8.pdf		09/06/2025 10:41:37	31/08/2025
<input checked="" type="checkbox"/>	Business Registration Certificate (M1) or Certificate of Incorporation (CI)	M1.pdf		09/06/2025 10:41:22	31/07/2025

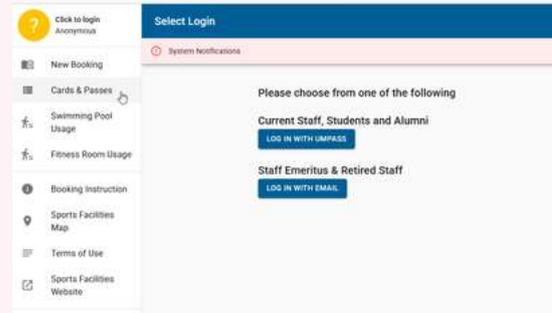
Below the table, there are two checkboxes for declarations:
   
 I/The company hereby declares that the business was established for not more than a year, therefore, unable to provide Tax demand note (M8)
   
 I/The company hereby declares that Business registration documents are not available for the following reason(s):

**Consumable Stock System:** To improve stock procurement and management, refining master data, streamlining purchase orders and stock-in processes, simplifying delivery and payment term maintenance, and enhancing reporting capabilities.

## Others Administrative Systems

### Sports Facilities Booking System:

Online application and payment for Sports Facility Cards and Swimming Passes were implemented, improving convenience and administrative efficiency.



**News Release System (NRS):** Improved event item retrieval with new categories for the UM 45th Anniversary webpage.

**VIP Guest Database:** Refined contact fields and improved search capabilities.

**Committee Databases:** Implemented batch email notifications for voting invitations and results.

**Event Management System:** Added attachment upload functionality and registration deadline reminders.

### Parking Monthly Pass Application

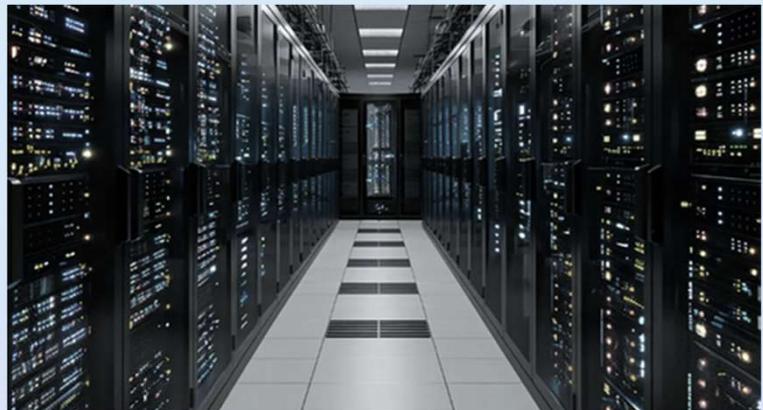
**System:** Streamlined the payment processes by supporting counter payment options via MacauPass and BOC POS devices, supporting a wider range of payment methods for all eligible users.





# GenAI service

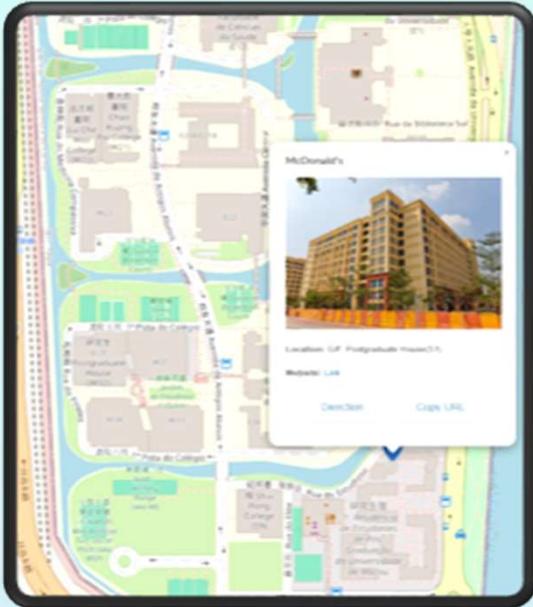
The GenAI service has been launched to provide teachers and students with convenient AI tools. The service has been upgraded to **DeepSeek-R1-32B** and now includes **Gemma-3-27B**. Users can securely log in using their UMPASS. Hosted exclusively on UM servers, the platform ensures security and confidentiality.



## Preparation for GenAI System Infrastructure

To strengthen AI capabilities and support teaching and research needs, dedicated GPU servers have been deployed together with a scalable distributed AI infrastructure, enabling reliable, high-performance, and future-ready AI services.

# New eMap System



The new <https://map.um.edu.mo> introduces advanced technology, route-search and guidance functions and reorganized map data to enhance user experience.

## QR code access

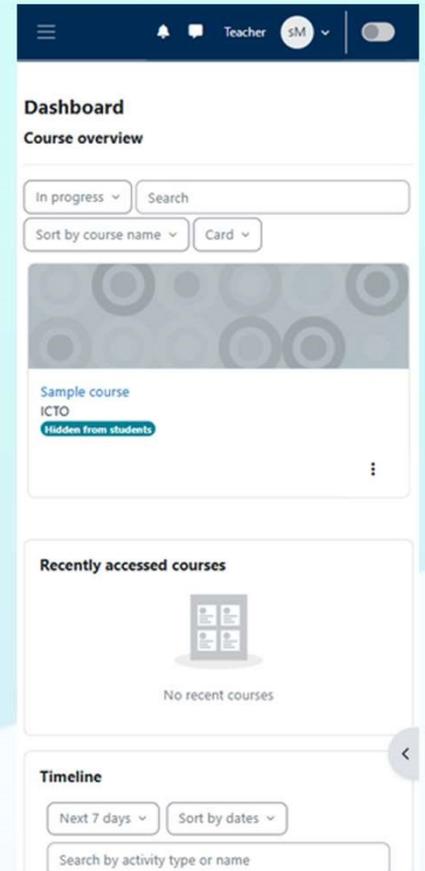


QR code access is currently available at **249 main entrances and other buildings across UM** and has now been **expanded to E6 meeting rooms**. UM staff can unlock doors using either their **campus card or QR code via the UM App**, while meeting organizers may **share access with participants** and grant **temporary QR access to external guests** for scheduled meetings.

# UM Moodle Upgrade



Upgraded to **Moodle v4.5** with a more user-friendly interface and navigation, **AI-powered text generation** (exclusive to teachers), and enhanced assignment submission workflows and reporting to improve engagement and accessibility.

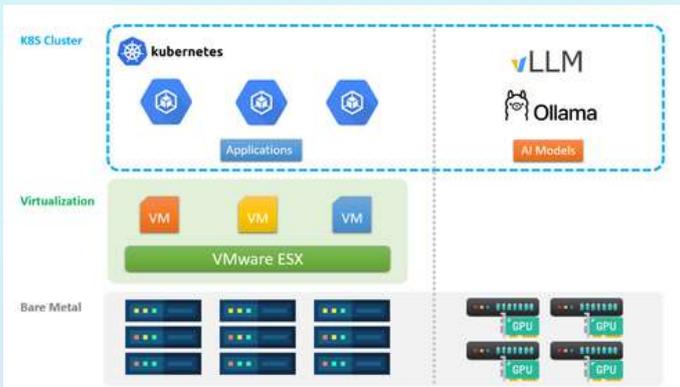


## Improved ICTO Computer Room Facilities



ICTO computer rooms have been upgraded with **clearer display monitors** to enhance the teaching and learning experience, and **advanced ceiling array microphones** providing 360° sound reception for hands-free, seamless instruction

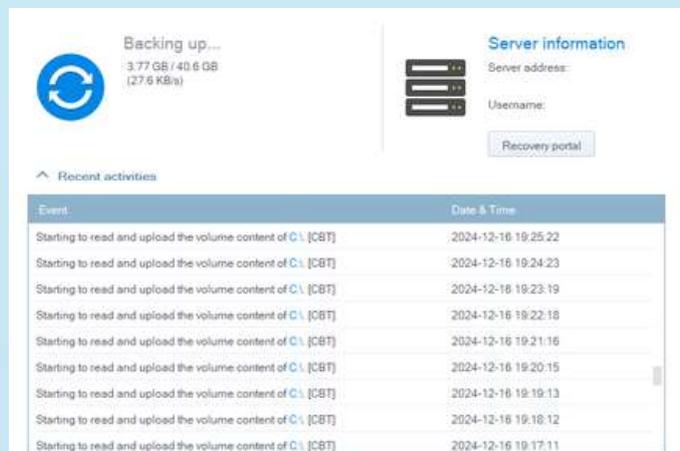
# Infrastructure Upgrade



The IT infrastructure refresh was completed with all new servers deployed and **supporting over 400 virtual machines**, delivering improved stability and performance. We also transitioned from OpenShift to an open-source Kubernetes (K8s) platform, enhancing automation, scalability, and container management. Integrated with our AI infrastructure, Kubernetes provides a robust, future-ready foundation to support evolving application and AI workloads.

# PC Data Recovery Service

Upon completion of the second phase, the service **protects over 1,154 devices and 369.4 TB of data**, ensuring reliable backup, recovery, and protection for all supported PCs.



# Joined CARSI

Starting from April 2025, UM staff and students can use their **UMPASS accounts to access domestic and international electronic resources and databases** via CARSI.

*CARSI (China Education and Research Network Federation Authentication and Resource Sharing Infrastructure), launched in 2006 by Peking University Computing Center and operated by CERNET, provides federated access to research and educational resources. Built on Shibboleth middleware using the SAML protocol and as part of the global eduGAIN federation, CARSI enables standardized access to worldwide academic resources.*

The screenshot displays the CARSI Resources website. At the top, there is a navigation bar with links for 'About CARSI', 'News', 'Resources', 'Members', 'Documentation', 'JOIN', 'Contact Us', and a user profile for '澳门大学教师'. Below the navigation bar, the page title is 'CARSI Resources'. A search bar contains the text 'resource name' and has a 'Search' button and an 'All Resources' button. Below the search bar, it shows '共139条结果 (免费15, 试用119, 部分免费/试用5)'. There are two main result cards: one for '优秀传统文化视频资源库' (Excellent Traditional Culture Video Resource Library) and another for '玻尔 Bohrrium 玻尔科研空间站' (Bohrrium Bohrrium Bohrrium Research Station). The Bohrrium card includes a description: '玻尔是面向全球科研人员的 AI 科研平台, 深度融合白研科研大模型、1.6亿+学术文献、多学科知识库、前沿实验能力和海量算力资源。从文献挖掘、实验设计到成果转化, ...' and lists the type as '会议论文, 电子期刊'.

# Network Connectivity

## in Hengqin Transitional Research and Education Site

In collaboration with the Hengqin Transitional Research and Education Site, **two connectivity enhancements** were implemented.



- Deployment of an International Private Leased Circuit (IPLC): A **dedicated and secure point-to-point link** was established between the main campus and Hengqin Transitional Research and Education Site, providing reliable connectivity to support unified wireless authentication, virtual desktop infrastructure, high-performance computing, generative AI platforms, research systems, and administrative applications, thereby significantly enhancing overall operational efficiency.
- Introduction of compliant international internet access: **Secure and compliant international internet access** was made available to staff and faculty, improving user experience and enabling broader access to global online resources and services.

# Network Upgrade



The Five-Phase Equipment Replacement Plan was completed, **upgrading about 2,000 devices**. The final phase replaced over 400 network devices, increasing speed from **100 Mbps to 1 Gbps** — a tenfold boost. The project also updated PoE standards and optimized network architecture to enhance performance and scalability

Over the past years, **more than 9,000 wireless access points (APs) have been installed**, with each residential college (RC) room equipped with one AP and staff quarters (SQ) provided with at least two. The final phase concluded the replacement of old APs in residential areas, including the deployment of **3,698 new APs** across various buildings this year.



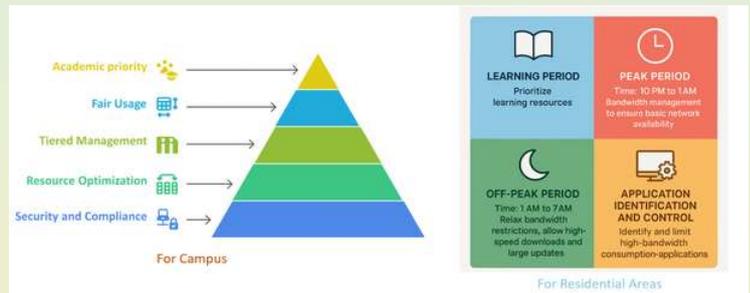
# Wireless Coverage Optimization



Signal reinforcement was completed in **17 halls**, doubling access points in key lecture venues and achieving post-upgrade speeds of **up to 404 Mbps download and 357 Mbps upload**. In addition, outdoor wireless coverage was expanded to **45%**, covering **14 outdoor locations**, focusing on the northern area, N6 Square, and Library Plaza, were enhanced through the deployment of **eight new OAPs** and upgrades to existing units, increasing backbone connectivity **from 100 Mbps to 1 Gbps**.

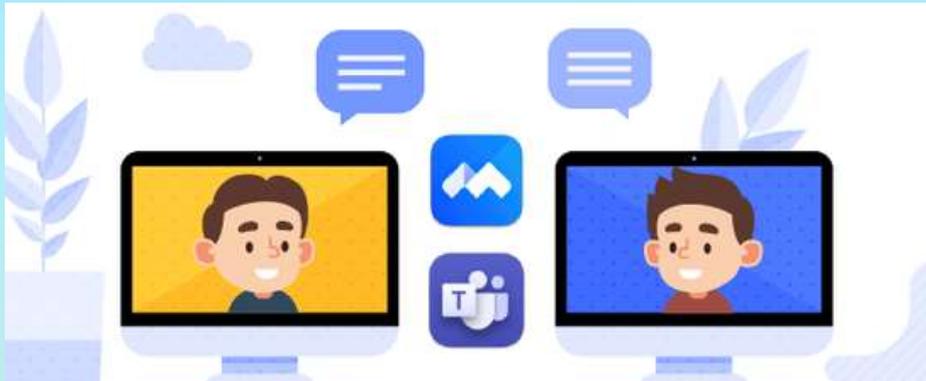
# Internet Access Management

To meet the growing demand for ICT services and users, Internet bandwidth was increased **from 17.0 Gbps to 18.0 Gbps**, an increase of **5.9%** compared with 2024, following key principles to optimize usage.



	2023	2024	2025	Variance
Internet Bandwidth	13.0 Gbps	17.0 Gbps	18.0 Gbps	5.9% ↑

## MS Teams and VooV Meeting Deployment



Following Zoom's service discontinuation, ICTO swiftly deployed alternatives to maintain online teaching and meetings. **Microsoft Teams and VooV Meeting (Tencent Meeting)** were officially launched for all staff and students to further enhance communication.

## Data Center Cooling Upgrade

Replacement of aging cooling infrastructure at the Primary Data Center in E4, with existing units beyond their 10-year lifecycle.



## Deployment & Computer Upgrade

Following the end of security updates for Windows 10, the rollout of Windows 11 was initiated, offering a **modern design, improved performance, enhanced security**, and additional features for users. In addition, a mass upgrade of computers was carried out for academic and administrative staff, with **over 600 desktop and notebook computers successfully upgraded**.



## Computing Facilities for Staff Members & Faculties

In 2025, ICTO has provided various types of ICT facilities to staff members and faculties as new requests, replacement or upgrade.

755

Desktop Computer

625

Notebook

343

Monitor

292

IP Phone

99

Printer & Multi Functions Copier

Besides, there were **314 borrowing requests** of computing equipment including notebooks, handwriting devices, video conferencing cameras, webcams, etc. The helpdesk also provides setup and support for large events using these equipment.

**12,599**

Service Calls

**99%**

Resolved Within Service Target

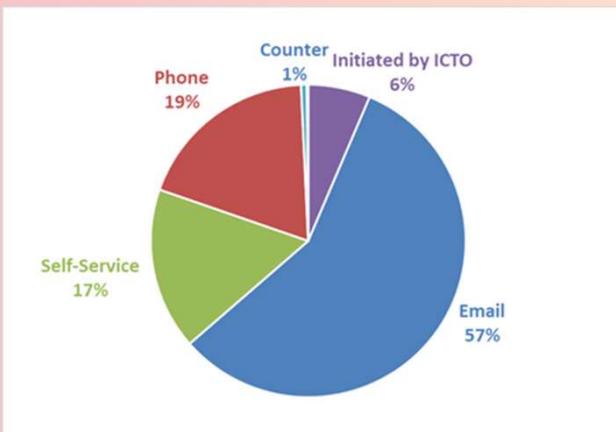
# Help Desk Service Calls Statistics

ICTO Help Desk received a total of **12,599 support service calls** in 2025 and 4% of the calls were received during ICTO extended support hours. Among the service calls, **99%** were resolved within the service target.



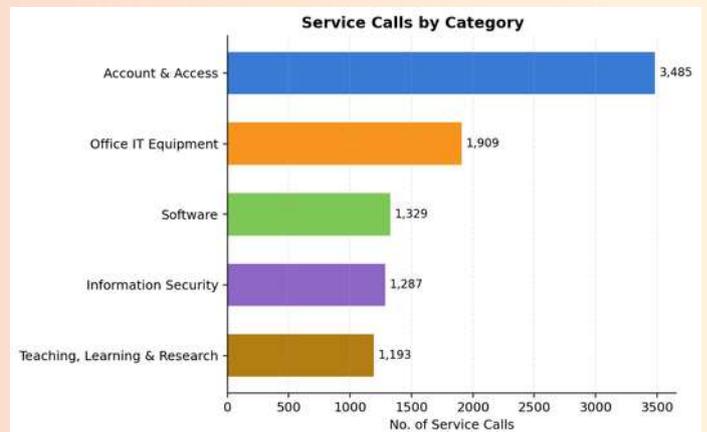
Calls Statistics	2024	2025	Variance
Service Calls	10,988	12,599	14.66% ↑
Resolved Within Service Target	99.22%	99%	0.22% ↓

## Support Calls By Reported Channels



Most of the service calls were reported through Email and Phone.

## Top 5 Categories of Service Calls



The most common service calls were Account and Access.

# User Literacy

## Digital 60 Seconds

A new 60-second video clip has been created to **help users quickly learn about the main services** provided by ICTO.



## User Trainings

**9 briefing sessions** were arranged mainly covering academic facilities, administrative systems, standard software and information security with over 230 participants.

- Briefing on Update of GenAI Service (2 sessions)
- Briefing on Microsoft Teams
- Briefing on VooV/Tencent Meeting
- Briefing on Web Conferencing Service
- Briefing on Windows 11 “Meet Windows 11 – Discover the Latest Features and Tips”
- Training of Event Registration System (EVM) and Event Management System (EMS)
- Training of Identity and Access Management (ACM) System
- IT Security Seminar



# User Literacy

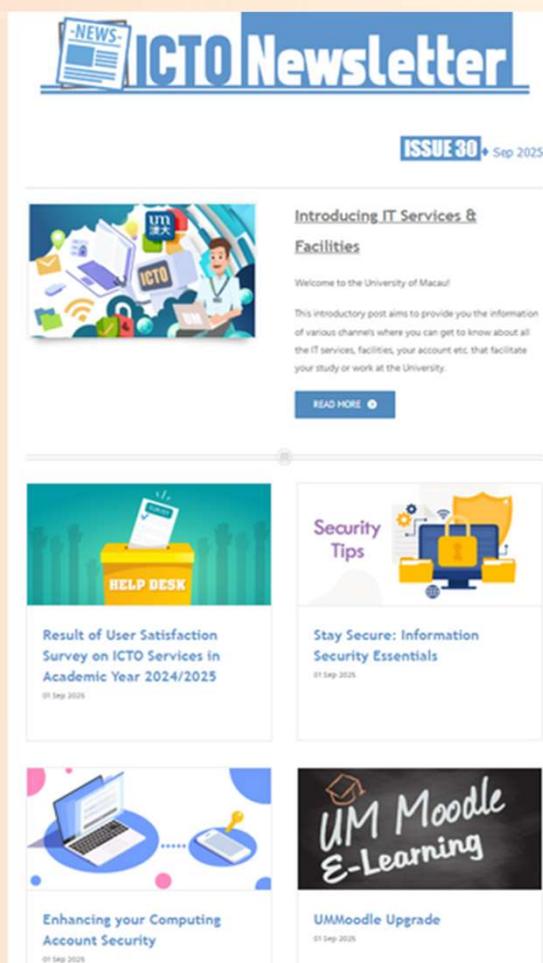


## Promotion of ICTO services and 2FA

At the start of the new academic year, a Service Counter was set up at the Learning Commons, along with a Department Booth at the Student Fair, to promote ICT services, facilities, and information security awareness.

## Newsletter & Tips

- **2 issues of ICTO Newsletter** were published in 2025 to provide update and information about ICTO services.
- A **dedicated webpage Quick Guide** for New UM Members is available online.
- Total of **28 ICT tips** with topics were published, such as IT security and alerts, general usage of facilities and services, using IT services outside campus, etc.



# Setup of IT Counter

An IT Corner has been set up outside the ICTO Help Desk (E5-2085), offering an **interactive, comfortable, and modern technological space** designed to enhance user experience and promote IT services.



# Information Security

## *User Security Awareness Program*



### **Security Quiz for Students**

**616** Students joined the quiz to raise the security awareness



### **Security briefing for New Staff**

**37** New Staff has joined the regular briefing sessions of security awareness



### **Security Training for IT Related Staff**

**24** IT Related Staff joined Cybersecurity Compliance Seminar and Network Attack & Defense Training.

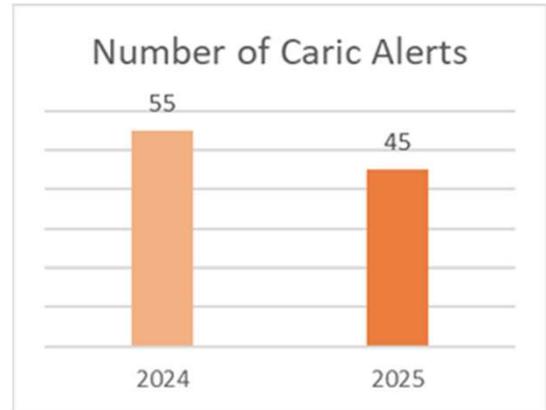


### **2025 Security Seminar**

To share latest security updates for UM users

# Figures of Information Security

Various Pentest were conducted **against 9 internet-facing applications that are essential** within UM. This test aim to identify vulnerabilities and potential weaknesses.



There are **45 security alerts** issued by Cybersecurity Incidents Alert and Response Center (CARIC) in 2025.

The security incidents was decreased by 24.72% in 2025 compared to 2024. However, it dropped by 17.65% if reports of spam and phishing email were excluded. Moreover, Secure Email Gateways have stopped 117 million (89.49%) of incoming emails, which were detected as malicious email.

## Distributed Denial of Service (DDoS) Protection Service

It was implemented to address escalating DDoS threats and ensure compliance with CARIC recommendations, using real-time traffic monitoring and cleansing to prevent network congestion and strengthen proactive defenses

## Enhanced Facility Network (FN) Security

Access Control Lists (ACLs) were deployed across key FN systems to strengthen security without disrupting operational traffic.



## Enhanced Patch Management & Compliance

Patch management was strengthened by aligning internal practices with regulatory requirements and implementing a structured framework for timely and compliant updates.



## Advanced Compliance with Macau Cyber Security Law

Internal processes were reviewed to align with the Macau Cyber Security Law, key improvement areas were identified, and a structured roadmap was established to enhance guidelines, system evaluations, and overall compliance readiness for 2026.

## Security Posture Enhancement through SecurityScorecard

It was successfully implemented and operationalized to enable systematic monitoring and continuous improvement of the organization's security posture. Initial issues were resolved, establishing a stable foundation for ongoing security enhancements.

# Communication

## Regional Academic & Technology Exchange

In support of the development of the new ICZ campus, visits were conducted to **universities and technology institutions across the Greater Bay Area**. These included the IT departments of regional universities such as Sun Yat-sen University, the Hong Kong University of Science and Technology (Guangzhou), the Chinese University of Hong Kong, Shenzhen, and Beijing Normal University–Hong Kong Baptist University. Visits were also made to other organisations, including the Hong Kong Internet eXchange, Zhuhai UM Science & Technology Research Institute.



## Professional Development

Staff members were arranged to participate in a **wide range of professional IT events** to strengthen technical expertise and industry awareness. These included the China Higher Education Digitalization Conference, Supercomputing Asia Conference, APSARA Conference, the 60th Asia-Pacific Advanced Network (APAN), Huawei Network Summit, and Tencent Global Digital Ecosystem Summit. In addition, participation was extended to the regional and international academic community through involvement in the 2025 ASC Student Supercomputer Challenge Finals held in Qinghai, where staff served as assessment panel members

# Communication

## Internal Visits

Courtesy visit were also arranged to **different Vice Rector offices** to provide updates about the current status of ICT services and the outline of ICT development for ICZ campus.



## User Groups Meetings

Regular meetings were arranged with three **user groups** from different categories, including the Information and Education Technology Committee (IETC), the Student User Focus Group (SUFUG), and the Academic IT Support Advisory Group (AITSAG).

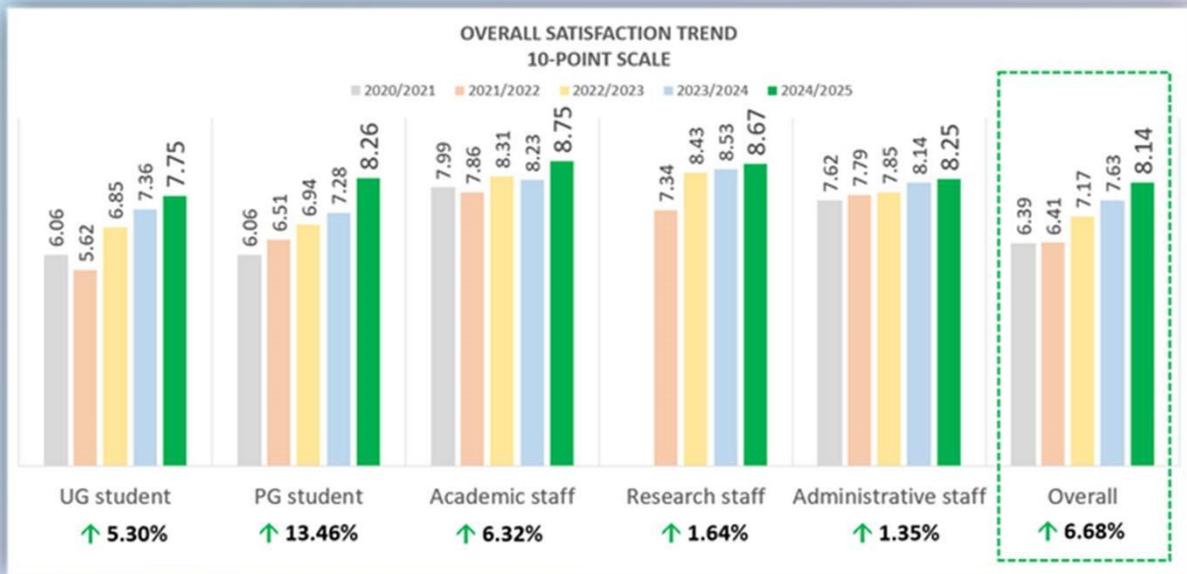


## Membership

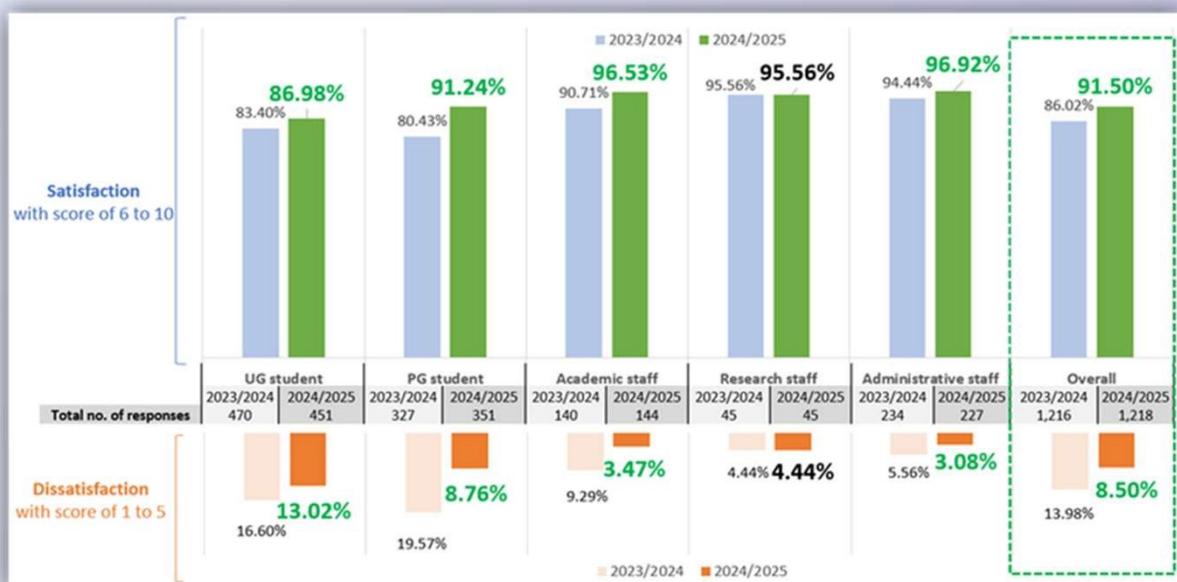
ICTO continues to be a member of the below organizations, as well as an operator of eduroam for Macao region.

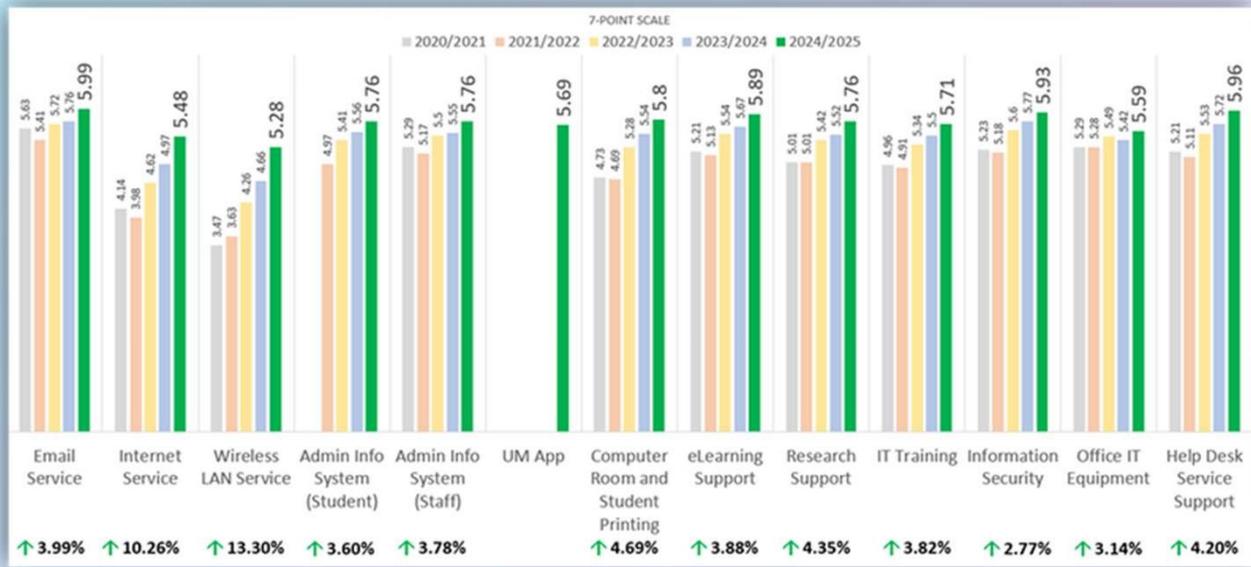


# User Satisfaction Survey

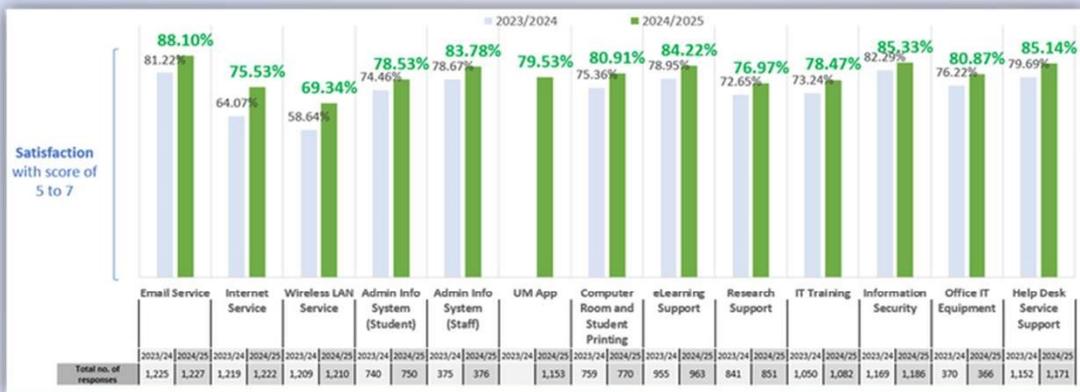


The mean score of overall satisfaction rose from 7.63 to **8.14 out of 10 (↑0.51)** with the score of all 5 user categories increased, while 91.50% responses rate a satisfactory score (6 to 10). However, **83.74% (↑6.80%)** of respondents agree that ICTO overall service is improving.





The mean score of 12 listed ICT services increased while **UM App is newly added**. All mean scores are above **5.2 (out of 7)**. Among the ICT services, 12 of them are rated with satisfaction score (5 to 7) by **over 75% responses**, and 5 of which are even **over 83% responses**.



## Improvement Needs

A total of 893 respondents expressed the improvement needs, which is 79 less than 972 of last year. **Network services** was ranked the first and selected by 468 respondents, **UM App and Office IT equipment** were ranked the second and the third with 202 and 113 respondents selected respectively.

# Performance Indicators

## Key Performance Indicators (KPIs)

**Service availability** measures the uptime of services for 7x24 and excludes downtime for scheduled maintenance.

Key Performance Indicator	Target	Actual Performance in 2024	Actual Performance in 2025
Internet Connection Availability	99.50%	100.00%	<b>100.00%</b>
MyUM Portal Availability	99.50%	99.99%	<b>99.99%</b>
Staff Email Availability	99.50%	99.98%	<b>99.91%</b>
Wireless Network Service Availability	99.50%	99.60%	<b>99.76%</b>
E-bulletin board Availability	99.50%	99.99%	<b>99.99%</b>
eLearning Platform Availability	99.50%	99.96%	<b>99.95%</b>
Lotus Notes Availability	99.50%	99.59%	<b>99.78%</b>
ShareDM Availability	99.50%	–	<b>99.90%</b>
UM App Availability	99.50%	–	<b>99.99%</b>
UMDrive Availability	98.50%	99.76%	<b>99.68%</b>
UMPASS Account Service Availability	99.50%	99.98%	<b>99.95%</b>
Website Availability	99.50%	–	<b>99.98%</b>

**Utilization of IT Resources** indicates the usage of the services within the specified duration.

Key Performance Indicator	Utilization Average	Utilization Average
	2024	2025
Internet Bandwidth Utilization	13.53Gbps	<b>14.56Gbps</b>
Maximum Concurrent WiFi Devices Per Day	Average: 21,571 Peak: 33,113	<b>Average: 20,042 Peak: 38,149</b>

# Performance Indicators

## Key Performance Indicators (KPIs)

Service performance refers to the actual performance of service under established target

Key Performance Indicator		Target	Actual Performance in 2024	Actual Performance in 2025
Code Quality	Maintainability Rating is A	100.00%	-	100%
	Reliability Rating is A	100.00%	-	100%
	Security Rating is A	100.00%	-	100%
ICTO Service Calls Fulfillment within <b>Service Target</b>		97.00%	99.00%	99.29%
Provision of technical advices on IT equipment within <b>Service Target</b>		97.50%	97.96%	98.28%

## Performance Pledge

PP Service	Service Quality Indicator	Process	Compliance % in year 2024	Compliance % in year 2025
Printing Service	Application for Printing Quota Adjustment	Complete within 2 working days	100.00%	100.00%

Reference: <https://icto.um.edu.mo/about-icto/performance-indicators>

# Future Plan

*We will continue to identify and address service gaps while embracing innovation through new technologies and modern service practices. These efforts will be closely aligned with University's strategic development and the construction of the campus in Hengqin Cooperation Zone. Key areas include:*

## **Optimize Electronic Services & Improve Efficiency**

Continuously refine e-services across all university units to streamline processes and reduce administrative burden.

## **Enhance High-Performance Computing Capacity**

Significantly increase computing power of High-Performance Computing Cluster (HPCC) to meet growing research demands.

## **Accelerate AI Integration**

Accelerate the adoption and application of artificial intelligence to enhance operational efficiency and improve user experience.

## **Propose Hengqin Campus ICT Service Plan**

Study and propose the Information and Communication Technology (ICT) service plan for the Hengqin campus, ensuring seamless infrastructure, connectivity, and service delivery to support the new campus's operations.

## **Support Macao SAR E-Government Policies**

Actively align with and support the e-government initiatives of the Macao Special Administrative Region Government.

# ICTO BY NUMBERS

		2024	2025
<b>No. of administrative information system modules</b>		231	230
<b>eLearning – UMMoodle</b>	Storage Usage (TB)	19	22
<b>Performance of High Performance Computing Cluster (TFLOPS)</b>		425.46	434.16
<b>Raw Capacity of Central Storage (TB)</b>		4,449.4	5,822.0
<b>No. of UM websites (exclude www.um.edu.mo)</b>		177	209
<b>Internet bandwidth</b>		17	18
<b>Campus Network</b>	No. of Network Ports	84,800	86,841
	No. of Optical Fibre Connections to Buildings	627	643
	No. of Wireless Access Points	9,027	10,468
<b>Wireless LAN</b>	% of Indoor Coverage	93%	93%
	% of Outdoor Coverage	43%	45%
<b>IT Facilities</b>	No. of Desktop Computers	2,196	2,216
	No. of Notebook Computers	1,073	1,077
	No. of IP Phone	2,638	2,727
	No. of Printers	699	729
	No. of Multifunction Copiers	126	133
<b>Help Desk Support</b>	No. of Support Service Calls	10,988	12,599
	Resolved Rate within the Target Time	99%	99%

## End of Report