III.C. TECHNOLOGY RESOURCES

In order to avoid redundancy and be as concise as possible, the College created a Glossary located in the Appendix explaining the processes and structures of the institution, such as Program Review. These processes and structures referenced in the report are noted with asterisks which are explained in greater detail in the Glossary.

III.C.1
Technology services, professional support, facilities, hardware, and software are appropriate and adequate to support the institution's management and operational functions, academic programs, teaching and learning, and support services.

Evidence of Meeting the Standard:

Local Campus IT Services:
- Local campus technology support is centralized in the Information Technology Services (ITS) department, supporting over 1,200 computers, laptops, and portable devices. ITS is headed by the manager of College Information Systems and its operations informed by the Technology Master Plan and the Technology Replacement Plan (III.C.1-1a), (III.C.1-1b),(III.C.1-1c).

- ITS staff ensure the protection and stability of software and equipment on the College's computer systems. Administrative, staff, and faculty computers, along with all academic laboratory computers, are configured to download the most updated versions of anti-virus, registry-protection, operating system and application software to avoid time-consuming repairs and outside threats (III.C.1-2).

- ITS, staffed with technical professionals who provide desktop user support, network maintenance, and audio/visual equipment support, is composed of the following sub groups (III.C.1-3):
  - Microcomputer Support provides front-line microcomputer support to all users. IT analysts and computer technicians conduct ongoing maintenance and upgrades of hardware and software for both administrative and academic computing.
  - Software Development plans, implements, maintains, and supports all district-wide administrative systems.
  - Media Services provides technical support for audiovisual equipment. Specialized services can be accessed through service contracts and managed through a work order system.

LACCD IT Services:
- The College receives IT support from the District Office of Information Services (DOIS) for matters related to district-wide technology infrastructure and systems. DOIS plans and maintains the infrastructure for local area inter- and intra- campus networks and institutional access to and security of the public Internet (III.C.1-4).

- DOIS is endowed with a comprehensive enterprise-level administrative system capable of recording, storing, and reporting data for student, financial, academic, and administrative transactions. Moreover, it manages the development, deployment, and support of centralized administrative functions and "middleware" platforms necessary to support

connectivity between software services delivered by other District resources (III.C.1-5).

- The District and its nine colleges work in collaboration to develop district-wide standards for data centers, network cabling, data storage, desktop computers, printers, servers, and projectors (III.C.1-6a-e). These standards have played a crucial role in all Bond A/AA and Measure J related technology projects.

DOIS IT Infrastructure and District-wide projects consist of:

- Student Information System (SIS) will be migrated to Oracle's PeopleSoft Campus Solutions in late 2016 (III.C.1-7a-b).
- The ESC (Educational Service Center), where the main data center is housed, allows users to submit and track changes to the Schedule of Classes (III.C.1-8).
- Electronic Curriculum Development (ECD) system, used to create Course Outlines of Record* (III.C.1-9).
- Student email system (III.C.1-10).
- CMMS (Computerized Maintenance Management System) is a trouble-ticket system designed to track and respond to technology-related issues (III.C.1-11).

Highlights of ITS Technology Initiatives:

- Wireless Network infrastructure consists of 95 access points throughout campus, providing convenience and ease of access to local campus systems, District systems and the public Internet (III.C.1-12a). A 30% increase in WiFi coverage, planned for 2016, will provide higher density and improved connectivity (III.C.1-12b).
- The Cisco VOIP-based phone system is used throughout campus for voice communications and currently undergoing an expansion to provide phone access in all classrooms (III.C.1-13a-b).
- The College has 103 Smart classrooms and 17 labs. Smart classrooms come equipped with overhead projectors, amplified sound, integrated wall controls, and computers (III.C.1-14a-c).
- The ratio of computers to students is 1:18 (III.C.1-15).
- ITS develops and maintains the College website which includes general information on classes, student services, and events. Portions of the website are integrated with DOIS systems such as SAP and the Student Information Database. The student portal provides email access while the faculty/staff portal incorporates links to resources such as the Program Review* and the Student Learning Outcome* (SLO) assessment systems. (III.C.1-16a-c).
- The SLO* online system, implemented in 2010, undergoes regular updates (III.C.1-16c).
- A Program Review* online system, implemented in 2007, is being redesigned to incorporate additional features and to simplify its interface (III.C.1-17a-b).
- Etudes is the current learning management system used for distance education courses (III.C.18).
- BlackBoard Connect, an outreach and emergency notification system, is used to communicate with students via email, text messages and automated voice calls. The system has the ability to send up to 10,000 messages in two minutes (III.C.1-19a-b).

- The College has a fully redundant fiber network infrastructure that links the main campus with the east campus and links all buildings together. The need of future buildings was anticipated when the network was first installed in 2009 (III.C.1-20).
- Microsoft Office 365 is a cloud-based system available to students and staff (III.C.1-21).
- Media Services offer:
  - Audio/visual technology, equipment and services to support the courses, instructional activities and media, and academic events at the College (III.C.1-22a).
  - Training for faculty and staff (III.C.1-22b).

Analysis and Evaluation:

Technology needs are continually evolving at the College and are integrated into many areas, ranging from students who use technology for registration, completing coursework, communicating with faculty and peers, to faculty who avail themselves of various technologies to deliver instruction, communicate with students, and manage classroom tasks. Many of the facilities' infrastructure and campus physical security utilize the campus technology infrastructure for monitoring and remote access purposes.

The Educational Master Plan (EMP) establishes the academic direction and priorities for the College. The Facilities Master Plan (FMP) and Technology Master Plan (TMP) work in concert to support the EMP and to identify infrastructure, equipment, and software requirements (III.C.1-1b). Requests for technical support are communicated through a new automated work order system (CMMS) and subsequently routed to the ITS and Media Services staff or external contractors retained by the College.

The 2010-2015 Technology Master Plan (TMP) is fully integrated with the College's Strategic Master Plan and aligns with the District Technology Strategic Master Plan. The TMP outlines technology solutions within the College and is supported by the Technology Committee. The committee provides access to instructional resources and information on the College infrastructure, develops long-range budget and planning for technology needs, and annually reviews and revises the effectiveness of the Technology Master Plan. In fall 2015, the committee agreed to revise the TMP by spring 2016, pending the update of the Strategic Master Plan and Educational Master Plan (III.C.1-23).

The ITS department adheres to the three-year comprehensive Program Review* cycle. This process includes revisiting the Mission Statements, assessing achievement of unit objectives and Service Area Outcomes (SAOs), and analyzing the effectiveness of the services provided to students. In addition to Program Review, the College regularly evaluates its technology services, professional support, facilities, hardware and software to ensure their adequacy in supporting the College's operational functions, academic programs, and support services. This evaluation is mainly accomplished by way of surveys:
- In the fall 2013 student survey, a high percentage of the 2,965 LAMC respondents indicated that the College is doing an adequate job of serving the technology needs of its students (III.C.1-24).

- In the fall 2013 faculty/staff Survey, a sizable majority of respondents either strongly agreed or agreed that technology and related support services allow them to effectively perform their required duties (III.C.1-25).
- A DE* Student survey conducted in fall 2014 was completed by 154 LAMC students and indicated a 64 percent level of satisfaction with computing services (III.C.1-26).

A new student information system, spearheaded by the District and due to be implemented in stages beginning fall 2016, will transform the delivery of services to students, faculty, and staff by allowing access from anywhere at any time via its Web-based services.

The College continues to research technologies that provide lower the Total Cost of Ownership (TCO) such as cloud-based systems and purchase components that enjoy longer life cycles and require lower maintenance.

ACTIONABLE IMPROVEMENT PLAN

The use of data collected from various surveys could be improved upon. By spring 2016, the technology committee will develop a process, using collected data, to better assess the technology-related needs of the College. This process will in turn inform the revision of the TMP and the Technology Replacement Plan.

By fall 2016, the technology committee will have developed a comprehensive Disaster Recovery Plan for major outages and large-scale catastrophes.

By spring 2016, the technology committee will have updated the TMP. The committee will also continue to revise the Technology Replacement Plan on an annual basis.

Los Angeles Mission College meets this standard.

LIST OF EVIDENCE

III.C.1-1a   LAMC Administrative Services Organizational Chart
III.C.1-1b   Technology Master Plan
III.C.1-1c   2014-2019 Technology Replacement Plan
III.C.1-2   List of Recent Hardware/Software Upgrades
III.C.1-3   IT Department Organizational Chart
III.C.1-4   DOIS Organizational Chart
III.C.1-5   DOIS providing enterprise level systems
III.C.1-6a   LACCD Technology Standards
III.C.1-6b   LACCD Technology Standards
III.C.1-6c   LACCD Technology Standards
III.C.1-6d   LACCD Technology Standards
III.C.1-6e   LACCD Technology Standards
III.C.1-7a   Student Information System (SIS)
III.C.1-7b   SIS Modernization webpage

III.C.2

The institution continuously plans for, updates and replaces technology to ensure its technological infrastructure, quality and capacity are adequate to support its mission, operations, programs, and services.

Evidence of Meeting the Standard:

Planning, Updates, and Replacement:

- New and replacement technology facilities, infrastructure, equipment, and software are planned and prioritized as part of the College's Five-Year Technology Replacement Plan (TRP). Adopted in 2013, TRP identifies the lifecycle of various technologies including computers, printers, and audio/video equipment and their associated replacement costs (Refer to III.C.1-1c).

- The annual online Program Review* system is used to request and plan for replacement of

infrastructure, equipment, software and other technology enhancements (Refer to III.C.1-17a).

- Agreements with multiple vendors are in place to ensure prompt support and regular updates of software (III.C.2-1).

- Updates for Etudes, the campus learning management system, are performed on a regular basis. The College will move to Canvas as its learning management system in fall 2016 (III.C.2-2).

- PeopleSoft will replace the current student information system, DEC, in 2016 (Refer to III.C.1-7a-b).

- The College has an infrastructure of 170 Virtual Desktop Infrastructure (VDI) endpoints. In 2015, ITS successfully deployed 50 repurposed desktops that had exceeded their prior lifecycle of eight years by converting them to VDI endpoints. The anticipated lifecycle for the repurposed desktops will be an additional five years (III.C.2-3).

- The Computerized Maintenance Management System (CMMS) is used to inventory assets and track life cycles of equipment (Refer to III.C.1-11).

Analysis and Evaluation:

The College systematically plans, acquires, maintains, upgrades, and/or replaces technology infrastructure and equipment through a well-developed process overseen by the College Technology Committee and informed by the Technology Master Plan (Refer to III.C.1-1b). ITS is responsible for the overall selection, installation, maintenance, update, and upgrade of all technology infrastructure at the College. At the District level, DOIS is actively involved in all tasks related to network security and district-wide systems.

The Technology Committee, housed under the College's shared governance umbrella, meets on a monthly basis to seek input on technology and computing needs from various campus constituencies. Furthermore, individual departments use an annual Program Review* system to request and plan for replacement infrastructure, equipment, software and other technology enhancements (Refer to III.C.1-17a).

Equipment lifecycles, as projected by TRP, determine timelines for upgrades and replacement (Refer to III.C.1-1c). TRP is reviewed multiple times throughout the year and updated annually by the Technology Committee.

The College relies on restricted funding sources to finance the initial acquisition of technology and services. However, the ongoing cost of upgrades and maintenance proves challenging. To mitigate cost and maximize savings, and whenever possible, ITS avails itself of District-negotiated agreements with select vendors to purchase new equipment. In addition, ITS employs alternate technologies such as Virtual Desktops Infrastructure (VDI) to lower the Total Cost of Ownership (TCO).

Los Angeles Mission College meets this standard.

III.C.2-1   LACCD Master Agreement
III.C.2-2   Learning Management System: Etudes Moving to Canvas
III.C.2-3   Inventory of VDI Computers

III.C.3

The institution assures that technology resources at all locations where it offers courses, programs, and services are implemented and maintained to assure reliable access, safety, and security.

Evidence of Meeting the Standard:

Access:

- Single Sign-on LDAP (Lightweight Directory Access Protocol) and Active Directory allow students and faculty to securely access multiple services such as wireless networks, Office 365, and district-wide systems, without having to remember multiple credentials. (III.C.3-1).

- Student ID: the College is in the process of transitioning to a statewide, Federated ID which will allow for easier access into systems (III.C.3-2).

- The new Student Information System (SIS) will connect students to a Web portal that seamlessly connects them to their email, SIS, and Canvas, the learning management system (III.C.3-3).

- Students and faculty are provided individual email accounts which are accessible both on- and off-site. Off-campus access is facilitated through a Web interface as well as industry standard smartphone email applications (III.C.3-4).

Safety and Security:

- Security Cameras are located throughout campus, both indoors and outdoors (III.C.3-5).

- Emergency call and mass notification stations are located throughout campus for immediate communication with campus security or public notification (III.C.3-6).

- The network infrastructure, protected by the enterprise firewall system, is jointly supported and maintained by local campus IT and District Office (III.C.3-7).

- All local campus systems run Microsoft System Center Endpoint Protection to protect against viruses, malware, and other threats (III.C.3-8).

- Wireless network users are required to authenticate against a user database. Users are able to roam between access points and are limited to ten hours per session before having to re-authenticate (III.C.3-9).

- In 2014, ITS implemented Microsoft's Exchange Protection Service, a cloud-based email filter that blocks emails containing potential threats or unsolicited advertising thereby effectively reducing the number of email threats arriving in user mailboxes (III.C.3-10).

Backup and Redundancies

- The N+1 model is an industry standard for creating resiliency and redundancy and used on critical servers, infrastructure components, and other high availability systems (III.C.3-11).
- The College maintains two Data Centers, one located on the main campus and another on the east campus. Critical systems are replicated between the Data Centers to ensure continuity of service in cases where one Center experiences failure (III.C.3-12).
- The College's Storage Area Network (SAN), also known as HP Lefthand and Nimble SAN systems, are used to provide increased storage performance and availability (III.C.3-13).
- 50% of servers run on HP Blade systems using VMWare virtual technologies, allowing for greater flexibility, management, and recovery in the event of a system failure (III.C.3-14).
- The Virtual Desktop Infrastructure (VDI) is used on approximately 25% of student computers, allowing ITS to centrally manage computers, provide better security, and increase longevity of hardware (Refer to III.C.2-3).
- All systems are equipped with UPS battery backups (III.C.3-15).
- All buildings on the main campus are connected to the Primary Data Center by a redundant fiber optic ring (Refer to III.C.1-20).

Analysis and Evaluation:

The College utilizes a number of technologies and models to guarantee that systems are consistently available, reliable, safe, and secure. Two self-sufficient Data Centers, located about a mile apart, safeguard business continuity and disaster recovery. The Secondary Data Center (SDC), housed in east campus, serves as a redundancy for the main campus' Primary Data Center (PDC), but also reduces its workload at peak times. Currently, all critical data such as email, student database, and website content are stored at the District Office Data Center with additional archive and backup copies stored off site. Further plans call for all LAMC data to be replicated offsite either in a new, shared Data Center located at one of the other college campuses in the District or alternatively, on a third party cloud-based service.

Los Angeles Mission College meets this standard.

LIST OF EVIDENCE

III.C.3-1   LDAP, Single Sign On
III.C.3-2   Federated ID
III.C.3-3   New SIS Web Portal
III.C.3-4   Student and Faculty Email Accounts
III.C.3-5   Security Cameras Map
III.C.3-6   Emergency Call Stations Map
III.C.3-7   Firewall Security
III.C.3-8   Microsoft System Center Endpoint Protection

III.C.3-9   [Wireless Network Authentication](#)
III.C.3-10   [Microsoft's Exchange Protection Service](#)
III.C.3-11   [Systems that use N+1 Redundancy](#)
III.C.3-12   [Two Data Centers](#)
III.C.3-13   [SAN: Storage Area Network](#)
III.C.3-14   [Virtual Servers](#)
III.C.3-15   [UPS Battery Backups](#)

III.C.4

The institution provides appropriate instruction and support for faculty, staff, students, and administrators in the effective use of technology and technology systems related to its programs, services, and institutional operations.

Evidence of Meeting the Standard:

- The College provides a variety of training opportunities on software and instructional technology:
    - At the Eagle's Nest*
    - Through technology flex activities
    - By way of learning management system online self-orientations (III.C.4-1).
- The College's subscription to Microsoft IT Academy makes Internet-based trainings of Microsoft products available to all staff and faculty (III.C.4-2). ITS offers timely training to faculty and staff on all software updates and new systems. Furthermore, special emphasis is placed on instructional technology used by a critical mass of faculty (III.C.4-3).
- ITS staff regularly attend technology conferences to stay up to date in the field (III.C.4-4).
- Faculty are required to obtain a DE* certification to teach distance education courses (III.C.4-5).

Analysis and Evaluation:

The College provides extensive technology support and training to faculty through a number of modalities. In addition, faculty have the opportunity to seek training through the College's online training resources and the Microsoft Academy (III.C.4-1), (III.C.4-2).

ACTIONABLE IMPROVEMENT PLAN

ITS will base future training calendars on additional feedback from faculty and staff on the types of technology and training they find most useful.

Los Angeles Mission College meets this standard.

LIST OF EVIDENCE

III.C.4-1   [Self-Orientation](#)
III.C.4-2   [Microsoft IT Academy](#)
III.C.4-3   [Training on Systems](#)

III.C.4-4   [Conferences attended by IT staff](#)
III.C.4-5   [Distance Education Certification](#)

III.C.5

The institution has policies and procedures that guide the appropriate use of technology in the teaching and learning processes.

Evidence of Meeting the Standard:

Policies and procedures, developed and reviewed on a regular basis at the District and local levels, guide the use of technology and ensure its reliability, safety, and appropriate use.

- The DE* Committee develops and updates policies related to online instruction (III.C.5-1).
- LACCD's administrative regulations regarding the use of email, computer systems, and College networks are enforced on campus (III.C.5-2), (III.C.5-3).
- The College has in place a mass email policy (Refer to III.C.1-19b).
- The College enforces LACCD's policies that apply to Distance Education (III.C.5-4), (III.C.5-5), (III.C.5-6).
- The College adheres to LACCD policy E-105 regarding student privacy rights in accordance with FERPA (III.C.5-7).

Analysis and Evaluation:

The District Technology Council, comprised of the Chief Information Officer, IT managers from all nine campuses, and the District Educational Services Center (ESC), recommends network policies and standards and oversees district-wide projects implemented across all nine campuses. The College has established policies through its Academic Senate and College Council to align the use of technology with the instructional environment. The shared governance process provides a vehicle to all campus constituencies to engage in dialogue regarding technology use and an opportunity for input by all who are potentially affected by policy changes.

Los Angeles Mission College meets this standard.

LIST OF EVIDENCE

III.C.5-1   [DE Policies](#)
III.C.5-2   [District and College Computing Policy B-27](#)
III.C.5-3   [District and College Network Security Policy B-28](#)
III.C.5-4   [Board Rule E-89 Distance Education Policy](#)
III.C.5-5   [Percentage Load DE Policy](#)
III.C.5-6   [Distance Ed Absenteeism Policy](#)
III.C.5-7   [District E105 policy, student privacy rights in accordance with FERPA](#)