

2011-16 Strategic Plan for Technology
Technology Advisory Group
Tompkins Cortland Community College
September 16th 2011

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Planning Theme and Vision Statement

Information technology at TC3 should be used to connect learners whenever, wherever and however they want to learn. TC3 strives to provide learners and staff members with access to the most current technologies available and to provide the training and support necessary to use them. This will enable the College to fulfill its mission using the most effective tools to enhance the learning process and to streamline the business functions of the College.

The most significant change since the last plan is people's near constant connection to web and/or mobile based applications and services. The key theme of the previous technology plan was described as "integration"; the plan prior to that spoke about "access". Because we are in an era when our community expects to be able to do what they want, when they want and where they are, we propose "pervasiveness" as a key concept. The first sentence of the vision statement was redeveloped to better express the concepts of access, integration and pervasiveness.

College Reorganization and Campus Technology

The College reorganization that occurred in July of 2008 included the combining of all administrative and academic technology departments. Under the newly created position of Dean of Campus Technology, the reorganization set a vision for unity and efficiency in meeting the technology needs of the community. The Campus Technology group was reorganized in July 2009 with goals that included:

- Providing support to faculty, staff and students in a clear and efficient way
- Increasing coordination and developing depth of support
- Creating the Campus Technology Council which serves as a management team to lead the department in the planning of the College's technology needs

Commitment to Accessibility

Tompkins Cortland Community College is committed to providing equal access for all qualified individuals to its programs and educational opportunities, including computers and other electronic resources, information technology, and technology-mediated learning opportunities. All purchases of new technology (both hardware and software), and the creation of new electronic resources, shall be compatible with currently available adaptive technology or other readily achievable reasonable accommodations with implementation procedures that are identified and put into practice.

Commitment to Sustainability

There are many opportunities for Campus Technology to improve the environmental impact of operations. The College is committed to implementing strategies geared towards sustainability without compromising the services we provide.

Areas of Focus

Cloud Computing

Background

Cloud Computing has turned software, storage space and processing power into a commodity that can be delivered over the Internet. Advantages of cloud-based services include lower up-front hardware and software costs, decreased installation times, and diminished maintenance requirements. These advantages allow technology personnel to focus more time on the support of users and less on underlying technology. Some of the disadvantages include a lesser degree of control over the availability and customizability of the service. In addition, like hosted services, data security and disaster recovery is an important concern with cloud computing. Finally, the ability to access and export College-owned data for reporting and integration purposes may be limited.

Software as a Service (SaaS) is one aspect of Cloud Computing that will likely benefit the College the most. TC3 has had several successful experiences implementing SaaS solutions. The most prominent of these are the Angel Learning Management System provided by SUNY Learning Network and the Live@EDU student email partnership with Microsoft. Administrative SaaS solutions for Payroll and Health Services have also been functioning productively for the past 2-3 years.

Vision

Cloud solutions will allow the College to provide more services and tools to faculty, staff and students at lower costs. Sharing of resources will be easier and space limitations for file storage will become less restrictive. By the very nature that they reside on the Internet, these services compliment the College's vision for access and pervasiveness of technology. Cloud-based services will be seamlessly integrated with existing systems and will become the preferred method of delivering functionality to users.

Recommendations

1. Campus Technology should develop a "menu" of cloud based functions that are available for instructional purposes and provide training for using them. Freely available services exist and these should be evaluated and used whenever appropriate. However the College should standardize functions for ease of use and support. An example of this would be having faculty only use Angel to share documents with students even though Google Docs is a free alternative.
2. Consider SaaS as a first solution whenever reasonable to do so. In the software selection process SaaS solutions should be given preference over on-premises solutions when costs and functionality are similar. In the long term the College should investigate moving locally hosted systems to the cloud for cost savings and functionality improvement.
3. Integration of data between cloud services is a growing need and is not standardized between vendors. Regular monitoring of the integrations is also needed to ensure

the quality, accuracy and security of TC3 data. To meet this need a Data Integration Specialist role would need to be created or an existing position would need to be modified.

4. Campus Technology should develop standard requirements for SaaS vendors including accessibility, security, reliability, performance, integration, disaster recovery, ownership of data, and the ease of future migration.
5. Video and other demanding multimedia file sharing should be done via cloud solutions exclusively. Cloud solutions provide superior bandwidth and storage space than what the College equipment budget could realistically support.

Customer Relations Management

Background

TC3 engages with a community that continues to grow in both size and diversity. It is critical to create standard operating methodologies to deal with fluctuating populations and the needs of these populations. Customer Relationship Management (CRM) systems allow organizations to engage with their customers in a strategic and systemized approach. The purpose of these systems is to improve the customer experience, attract new customers, and grow the customer relationship while keeping costs associated with customer service down. With the appropriate identification and use of CRM technologies we can continue to offer and maximize services to our individualized shareholders: whether it be students, local businesses, community members, faculty or staff.

Vision

Each department at TC3 will be able to serve a variety of populations in an efficient, effective, consistent, and concise manner. Through the cooperative use of CRM technologies, we will track, manage, and systematically organize all internal and external communication. CRM technology will enable us to provide improved specialized service for the unique needs of external and internal shareholders.

Through the use of collaborative and integrated customer relations management technologies, tailored to the needs of each College department, faculty and staff would be able to identify, engage, and foster strong relationships with our diverse student population.

Recommendations

1. Each department will perform a communications audit to determine the “who”, “when”, “what” and “how”. Communication will be coordinated to eliminate duplicative effort.

2. Implement an interactive, intelligent customer profile system that allows for individuals and organizations to have unique profiles that integrate all their TC3 relationship activities into one location and resource center. Some examples are:
 - a. "Checklist to Acceptance" for prospective students
 - b. "Parent/Advocate Profile" for parents to be engaged with their student
 - c. "Philanthropy Profile" for development office
 - d. "Partner Profile" for prospective and continuing local, national, and international partners.
3. Additional CRM software should integrate with PowerCampus Student Information System (SIS), which will remain the system of record for contact information. CRM solutions may vary by department based on their unique needs.
4. Continue to convert more workflows to paperless processes so that all information about an individual can be accessed online integrated with, or supplemental to, the CRM system(s).

E-books and Open Content

Background

The technology behind E-books has been around for some time but recent advancements in low cost reading devices and improved delivery methods have led to increased growth in adoption. Textbooks in electronic formats are already available from publishers at a lower cost than the printed version. TC3 has already begun exploring this technology; Library Services in the Baker Commons has purchased half a dozen readers to pilot their use. These are available for loan to staff and students.

Open Content is any intellectual work published under an open license allowing for free copying and sharing. When combined with the E-book technology, open content provides a powerful method of delivering instructional materials. TC3 is engaged in an initiative to promote the adoption of Open Content as a way to reduce textbook costs for students.

Vision

TC3 will strive to be a leader in the use of Open Content in instruction. Partnerships will be established and resources developed that will deliver high quality content to students at no, or significantly reduced, cost. Students will eventually be able to purchase their entire textbook needs in an electronic format, the savings of which will greatly exceed the expense of a reading device.

E-Books will provide students with content that is superior to print in interactivity, capability to communicate ideas in multiple ways, easy conversion to different formats for accessibility and built in annotation.

Recommendations

1. College should make adoption of Open Content textbooks a priority and provide support to faculty in the adoption of these materials.
2. The College should purchase various e-Readers, as well as devices such as iPads, so that faculty and staff have the opportunity to become familiar with the technology. Add five additional devices for use in library each year for the next five years.
3. Continue to pursue cheaper alternatives to textbooks including Open Content.
4. The College will ensure that any e-books or e-book services purchased by the College are fully accessible or an alternative format is provided with the same timeliness as the e-book.
5. Train faculty on issues of accessibility.
6. Encourage faculty to make use of the course management system (currently Angel), in all course sections, to provide online access to open course materials.

Faculty and Staff Development in Technology

Background

The rate at which new technologies are becoming commonly available exceeds many people's ability to learn and adopt them. To meet that challenge the College must invest in the development of its personnel. The TAG sub-committee on Faculty and Staff Development in Technology has determined several desired outcomes regarding professional development in technology for the next five years.

Vision

TC3 will provide the training and resources necessary for staff and faculty to comfortably use the most effective and advanced technologies when performing their job. A structured program should be developed to suit groups of faculty and staff with common technology needs. Individuals would have a means of assessing their technology skills and needs. Technology training will become a key component of the College's professional development efforts.

Recommendations

1. The College should provide several forms of training for faculty and staff. This will include an "in-house" conference in the form of a Technology Day, during which faculty and staff using technology in innovative ways will provide a series of workshops designed to share what they have been doing with others at the College.
2. The College should develop a technology trainer position, or modify an existing position, dedicated to coordinating a staff technology training program.
 - a. The schedule for technology training events needs to be scheduled well ahead of time so that staff can plan accordingly. Additional training will be provided as needed throughout the year, especially during non-teaching faculty contract days.

- b. Employee Orientation: Specific training should be provided as part of the orientation process.
- c. Training will be provided in a variety of formats. This may include video modules that will be readily available over the web for all employees, along with more traditional text-based instructions.
- d. An evaluation tool will be provided to trainees after they have gone through the training process. Also, at a pre-determined time after the training, trainees will be contacted for follow-through sessions (in person or online).

Mobile Computing

Background

Mobile computing is the fastest growing technology segment, not only on campus but in the world as well. The proliferation of smart-phones, laptops, net-books and tablets is increasing among staff, students and faculty. Other devices, such as music players and handheld video game consoles are also part of a growing trend of Wi-Fi enabled devices. Access to the web via cellular devices continues to grow, with a 700% increase in smart-phone access to the Internet predicted by 2015₁.

TC3 has been actively embracing mobile technology since the launch of our mobile initiative in 2007. The College is using texting as way of communicating with students, has partnered with AT&T to bring 3G cellular service to campus and redesigned its mobile website in 2009. There are many exciting instructional applications of mobile technology inside - and outside - the classroom. It is highly likely that students will want to see more services delivered on mobile devices over the next five years.

Vision

Mobile computing provides a unique opportunity to engage students in an unprecedented manner. Commonly available devices can provide a way for students to interact both in and out of the classroom – performing activities ranging from answering survey questions in real time, to gathering data “in the field”. In the near future, augmented reality applications will be available to allow students to receive instructional information relevant to their physical surrounding. In addition to instructional uses, there are many opportunities for the use of mobile computing to provide student services related to finances, advisement, registration, etc.

Recommendations

1. Ensure wireless access everywhere on campus and provide good connectivity throughout all buildings. Target certain classrooms as dedicated “mobile learning zones” to ensure connectivity in those spaces.
2. Promote the use of Rave Wireless. Provide more training for faculty to use the system. Allow clubs and student groups to begin using Rave.

3. Partner with a vendor, SUNY or other College to provide mobile devices to students at significantly discounted prices.
4. Ensure that course outlines list any mobile device requirements in order for the purchase to be covered by financial aid.
5. Increase content and services on mobile.tc3.edu website. Update mobile myInfo application. Offer more local information and resources such as: bus schedules, local business connections, TC3 organizations and athletics scores and news, student life and residential life services
6. Train faculty to develop “Mobile Enhanced Courses”, modeled after web-enhanced courses.
7. Have mobile devices available for staff and instructors to borrow.
8. Social Networking is becoming increasingly mobile and therefore continued development of TC3’s Social Networking presence is necessary to keep the community engaged anytime and everywhere.
9. Develop a way for faculty and staff to text message students, the preferred method of communication for traditional aged students.

Summary of Budget Recommendations

Technology Base and Infrastructure

It is important that the College maintain the technology infrastructure and base of installed equipment. Campus Technology has calculated the levels of funding required to sustain the replacement cycle of the current base of deployed technology. The table below is based on the current levels of technology deployment and assumes very little growth. The numbers are based on 2011 prices for each item. Price increases have not been included in the calculations.

	Budget 2011-12	Budget 2012-13	Budget 2013-14	Budget 2014-15	Budget 2015-16
Network Servers	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
Computers: Desktop	\$87,000	\$85,000	\$83,000	\$81,000	\$79,000
Computers: Laptop	\$51,000	\$53,500	\$56,000	\$58,500	\$61,000
LCD Monitors	\$13,000	\$13,000	\$13,000	\$13,000	\$13,000
Printers	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000
LCD Projectors	\$27,000	\$28,550	\$30,100	\$31,650	\$33,200
Document Cameras	\$17,500	\$17,500	\$17,500	\$17,500	\$17,500
Total:	\$220,500	\$222,550	\$224,600	\$226,650	\$228,700

Technology Replacement Cycle

Technology	Replacement Cycle (in months)	Number used in calculation
Server	as needed (performance)	as needed
Computer: Desktop	48 – 60	52
Computer: Laptop	36 – 48	42
LCD Monitor:	84 – 96	96
Printer	48 – 72	60
LCD Projector	48 – 60	54
Document Camera	48 – 60	60

Technology Growth and Improvements

In addition, infrastructure improvements are necessary to support all the recommendations contained in this strategic plan. The table below also outlines the required funding levels to achieve the improvements.

- Bandwidth, Internal: wired and wireless
- Bandwidth, External: Internet bandwidth
- Virtual Desktop Computing
- Technology Infrastructure
- Classroom Improvements

Recommendations	Budget 2011-12	Budget 2012-13	Budget 2013-14	Budget 2014-15	Budget 2015-16
Data Integration Specialist Role (Cloud Computing)	.25 FTE		.25 FTE		
Development of Technology Trainer Role (Faculty/Staff Development)	.25 FTE				
Total, FTE:	.5 to .75 FTE addition in three years				
Upgrade existing Wireless Access Points (Mobile) (31 of 39 do not support wireless-n specification)	\$10,500	\$10,500	\$10,500		
Additional Wireless Access Points on Campus (Mobile)		\$3,000	\$3,000	\$3,000	\$3,000
Smart Classroom Design Upgrade	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000
Additional Smart Classrooms (2 per year)	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000
Total, dollars:	\$55,500	\$58,500	\$58,500	\$48,000	\$48,000

Developing the plan

The Technology Advisory Group (TAG) began discussions about updating the technology plan in fall 2009. TAG decided to take a different approach to this plan; compared to the previous plan, the focus would be less specific and more strategic in its vision. This approach was deemed preferable for two reasons: first, TAG recognized that the newly structured Campus Technology group was going to develop the kind of broad specific projects annually that previously would have come from the plan. And second, TAG recognized that recommending specific initiatives would be biased towards near term technologies and not inclusive of technologies that may be on the horizon at the time the plan was developed – and, perhaps, common place at the end of the term. It was therefore decided to develop subcommittees for five topic areas based on emerging trends found in our initial research. The subcommittees were charged with researching the technology area further and creating recommendations that align with the College's mission.

To guide the development of the plan a survey was administered to faculty, staff and students. The survey instruments can be found in Appendix B.

The final draft was posted for review by the College community on June 7, 2011. Feedback was considered and reviewed until the final draft was accepted by TAG on September 16, 2011.

Response to the Previous Technology Plan

Improve technology funding to 2% and supplement with grant funding:

In the previous plan TAG recommended that the College redouble its effort to allocate 2% of the annual College budget to equipment. In the previous five years an aggregate total of less than 1% of the College budget was allocated for technology equipment. Additional resources, through Perkins grants and capital projects, were also available. In all approximately a 1% equivalent of the College budget was spent on technology equipment. The lower funding levels were offset somewhat by the declining cost of desktop and laptop computers.

Upgrade PC's, Printers, and Servers according to existing replacement schedule:

While we have not been able to adhere to a strict timeframe of replacing computers and related equipment after a third full year of use, we have been able to replace most computers by the end of the fourth year. The replacement cycle has served staff and students well in recent years. TAG recommends that the College continue with the

existing replacement schedule. A significant investment was made in blade servers to create a virtualized environment. In total 25 physical servers have been virtualized.

Develop smart classrooms and meeting rooms

Since the development of the previous technology plan the College has greatly increased the number of technology enhanced classrooms. With few exceptions it is now standard to include the following in all classrooms: LCD projector, computer, DVD/VHS player and speakers. Eighty-five percent of classrooms have these enhancements. Six meeting rooms on campus, and one at Tioga Place, are technology enhanced.

Many of our lecture classrooms have received additional technology enhancements. These “smart” classrooms include a document camera, Symposium, gyro mouse (for PowerPoint presentations) and a full-size desk, in which the equipment is integrated, with push-button controls. The previous plan called for upgrading 50 classrooms to smart classroom status in the five year period. At present there are 30 smart classrooms on campus and 5 at the Ithaca extension center.

Replace current telephone system

In September 2010 a Nortel Option 11c PBX was installed. The upgrade, which consisted of both software and hardware, provides the College increased phone service reliability. It also provides greater ability to be expanded with more options over the next ten years.

Accommodate increased use of mobile and wireless devices

Campus Technology expanded the wireless network to include more coverage in the main building. In all there are 31 access points installed on campus compared to less than a half-dozen five years ago. The new athletic facility has 3 access points and the Student Center has 3 access points. At present the extension centers do not have TC3 provided wireless networking.

Campus Technology implemented the Bradford Campus Manager system to provide automated authentication to the wireless network and to verify that the connecting system is up to date with regard to the operating system and anti-virus software.

The expansion of access points, along with the automation of the process, allowed more devices than ever to connect to the wireless network. During the fall 2010 semester an average of over 840 (College-owned and personal) devices connected to the network each month.

Enhance uses and capabilities of the TC3 ID card

In August of 2005 the Faculty Student Association chose Heartland Campus Solutions (formerly General Meters Corporation) as our ID Card system partner. Services now accessible via the TC3 ID card include:

- Library resources

- Printing and copying
- Point-of-sale including the cafeteria, vending machines, residence hall convenience store and laundry services
- Residence hall access control
- TC3 health center access control
- TC3 child care center access control
- Sporting and College Entertainment Board events

Expand and enhance online learning resources for students

Many faculty/adjuncts have implemented a variety of interactive multimedia formats in their online courses. PowerPoint files are one commonly used format as they are easily able to be converted for inclusion in online courses through the Angel Learning Management System. This underscores the importance of training faculty in accessibility as not all PowerPoint slides are created in an accessible manner.

TC3 contracted with TechSmith, a screen capture and recording software company, to provide video hosting services. Faculty can upload their own standard video productions or those made with Camtasia, a screen capture application. Uploaded videos are easily accessible via the Angel Learning Management System. At least twelve instructors are now making use of Screencast.com for their online instruction.

Instructors are also beginning to directly link video programming from YouTube into their Angel courses. Directly linking the content eliminates the need for students to leave their online course to view the video. The new version of Angel (7.4 as of this report) also includes a simple method for inserting flash videos into their courses.

SUNY Learning Network is providing licensing for Elluminate, a program for providing synchronous online meetings, as part of its current service contract. At present TC3 does not use the service.

Insure Internet and network infrastructure bandwidth supports needs of the College

The goal of the previous plan was to increase the bandwidth to the College from 3 Mb to 6 Mb. The current Internet capacity is 45mbs and is contracted through Time Warner.

Campus Technology implemented a system monitoring device called PacketShaper to monitor and manage bandwidth utilization. The device measures network application performance, and categorizes and manages Web traffic based on its content.

Campus Technology is implementing a Procera box on the academic network to monitor bandwidth utilization and develop a strategy for traffic management to improve performance.

Foster academic integrity in an online learning environment

The TC3 Library subsidizes and maintains the College's Turnitin account. Turnitin is an academic plagiarism detection service used by teachers and students to avoid plagiarism and ensure academic integrity. Turnitin can offer (?) students on their work and check for potential plagiarism. Since the writing of the previous plan the number of faculty and staff with Turnitin accounts has increased from 20 to 85. Turnitin integrates with the Angel LMS, giving instructors an easy way to use this tool in courses already being taught in Angel.

The College has not yet established a proctored, computerized testing facility on campus for online and hybrid courses. Scarcity of space on campus makes this resource difficult to provide.

Install and maintain security, virus, spam, and Windows updates systems

Administrative systems are now automatically kept up to date with security patches via Active Directory policy. Sophos Endpoint Security is the current solution for antivirus and antimalware prevention on all College owned servers, desktops and laptops. Anti-virus programs are required on all computers connecting to the wireless network. Campus Technology implemented the anti-spam product, Double-Check.

Support the needs of the Residence Halls in concert with the College

The Internet connections in the residence halls are managed by Time Warner. Other support issues are addressed later in this report.

Implement new security policy - Gramm-Leach-Bliley

A new information security protocol was developed in a joint effort by Campus Technology and key staff responsible for data management on campus. The new protocol addresses the issues raised in the Gramm Leach Bliley Act along with many other important security concerns. The protocol was approved by the College Forum and the President.

Coordinate technology planning and the master plan process

Though TAG did not have members officially participate in the previous master plan process several TAG members, including Bill Demo (co-chair), Brian Ackley, David Lewis, and Bob Yavits, were involved in the planning of all technology aspects of the master plan.

Develop single sign on/authentication

Students are issued a single "myTC3" account upon enrolling at the College. This single account allows access to academic records, email, online course and more. The myTC3 portal (<http://my.tc3.edu>) is the single point of entry to each of these applications. All new applications implemented by Campus Technology are required to be able integrate with our single sign on systems.

Consider providing centralized help for students using online systems

Students now have one place from which they receive support for accessing all of TC3's online services, campus provided technologies and wireless network. These support services are available in person, over the phone or via e-mail. The office is staffed until 7:30 p.m. on weekdays and two half-day shifts on the weekend.

Determine need for increased weekend and evening system support

No formal analysis was conducted regarding the need for evening and weekend support. Limited support services have been extended to those time periods. Student workers are available until 7:30 each weekday evening. Student workers are also on duty when the Learning Commons is open on Saturday and Sunday. The support they provide is limited to basic troubleshooting with computers and printers and assistance with accessing TC3's online resources and wireless network. There is no formal plan for handling issues with major systems, such as e-mail or any of the myTC3 systems.

Purchase laptop or tablet computers for student use and/or replace all CRT monitors with LCD

As of the start of the fall 2011 semester, there are 20 laptops available for students to check out for use within the Baker Commons. The loan period is two hours.

At present nearly all monitors on campus are based on LCD or LED technology. The few exceptions are systems that are in less secure spaces. Approximately 99% of computers have LCD/LED monitors.

Appendix A: Committee Members

Cloud Computing

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Customer Relationship Management

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Faculty/Staff Skills Development

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Robin Hinchcliff
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Lisa Payne
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Robert Yavits*

**Committee Chair*

Appendix B: Survey Instruments

Staff and Faculty (email and online discussion board)

The Technology Advisory Group (TAG) is working on developing a new five year technology plan for the College. To collect input from the College community we have started a discussion thread on my.tc3.edu Any and all individual contributions are welcome. If you do not wish to participate in the public discussion you may also send your input to me via email.

You can write from either or both of the following perspectives:

- 1. How technological changes will impact your mission and role*
- 2. How you plan to use technology to better accomplish your mission*

Keeping in mind the ideas expressed above, list and briefly describe any specific computer/information technology needs that will need to be taken into account in the College's technology planning.

Students (online and limited in-class survey)

TC3 is in the process of writing its next strategic technology plan. The plan will guide the deployment of technology over the next five years. With regard to the future use of technology at TC3 please share your thoughts on following two questions.

- 1. How do you imagine the future of learning at TC3?*
- 2. What do you imagine future TC3 students will be being doing that today's students cannot?*

Selected Suggestions from the Survey

I Imagine:

- a focus on sustainable design (Ivan)
- more/all e-books (Amy, Arnold, Eric, Kris, Stacey, Tristan)
- more online classes (Arnold, Elizabeth, Michael)
- tablets (Amy, Elizabeth)
- telecommuting and telepresence (John)

Appendix C: Web Applications activity

Figure 1: Page Requests on MyTC3 per month

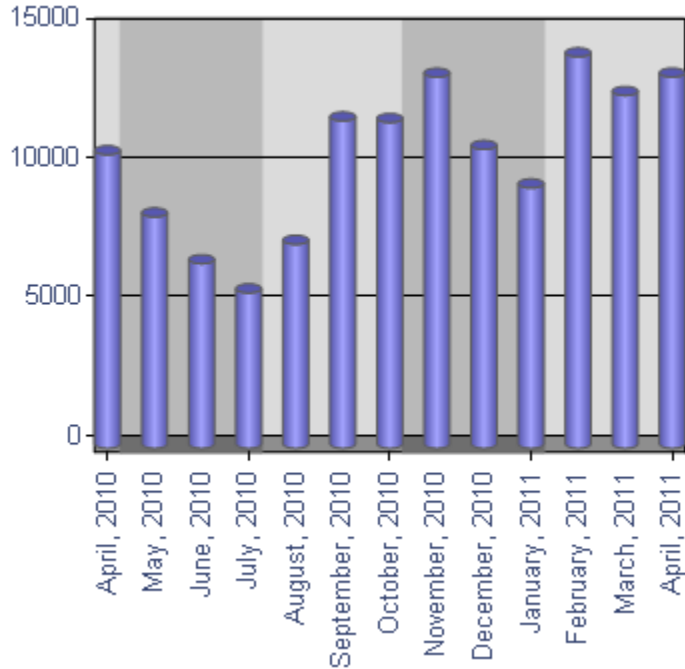
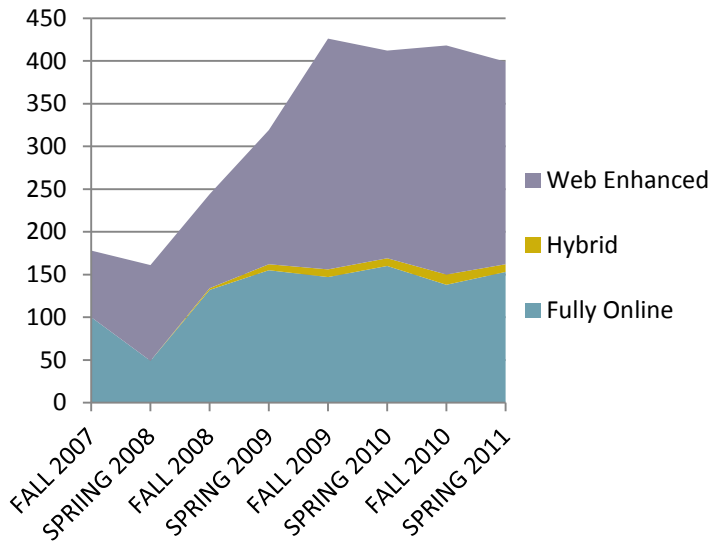


Figure 2: Course Sections in Angel LMS



Appendix D: Technology Deployment

By the Numbers

Item	Administrative	Instructional	Total
Computers: Desktop	267	435	702
Computers: Laptop	144	60	204
Printers	108	22	130
LCD Projectors	86 – primarily instructional		86
Document Cameras:	54 – primarily instructional		54
Servers:	25 virtual servers on 7 Blades, 18 stand-alone servers		

Appendix F: Campus Technology Sustainability Efforts

Campus Technology Report on Sustainability Efforts.

Submitted by Dean Marty Christofferson, February 23, 2011

This report is available on the College portal.