

Wyoming Community College Commission
Request for New Pilot or Revised
Degree or Certificate

A. **College:** Laramie County Community College

B. **Date** submitted to WCCC: _____

C. **Program**

1. Request for:

New Program Pilot Program Revised Program

2. **Program Title:** Datacenter Technician

3. Degree or Certificate to be awarded:

Degree: AA AS AAS Other

Certificate

4. Educational Pathway:

Energy Construction Hospitality Technology Health Care other

5. Total number of credit hours: 16

6. Suggested CIP (Classification of Instructional Program) code (6-digit): 47.0104

7. Planned semester/year new program will begin: Fall 2018

8. Will any part of this program be provided by non-accredited vendor(s)?

YES (Provide details) NO

9. Will all or part of this program be available to students via online or other distance education technologies?

At the start of the program? Within three years of the start of the program? No

D. Program description as it will be included in college catalog:

This program prepares students for entry level employment in data centers or other businesses that have need of computer technicians with training and/or certifications in basic computer repair, server installation, and networking. This program prepares students to take the industry certification CompTIA exams A+, Server+, and Network+.

1. Expected Student learning outcomes from completion of the program:

- Students will be able to demonstrate essential knowledge and skills needed to effectively design, configure, manage, and troubleshoot any wired and wireless network.
- Students will be able to effectively support IT infrastructures through the understanding of the most common hardware and software utilized in data centers.
- Students will be able to effectively plan, secure, and maintain IT environments using a variety of server equipment.

2. Program Layout by Semester

Semester 1		
CMAP 1920	Hardware Maintenance (CompTIA A+ Exam)	4
CMAP 1615	Operating Systems (CompTIA A+ Exam)	3
CMAP 1940	Server Installation (CompTIA Server + Exam)	3
CSCO 2000	Beginning Internetworking (CompTIA Network + Exam)	3
HMDV 1510	Success in the Workplace: Soft Skills	3
		16

E. New course prefixes, course credit hours and:

1. Is the community college is using a course prefix which is new to Wyoming public higher education institutions: ___ Yes ___X___ No ___

2. New course prefixes have been coordinated:

with UW (transfer) ___ Yes ___ No ___X___ Not Applicable

or WCCC (CTE) ___ Yes ___ No ___X___ Not Applicable

F. New course descriptions:

1. The following are course descriptions for each new course in the program (include prefix, course number, title, credit hours, requested level of instruction (LOI of 1,2, or 3) and description):

CMAP 1940 Server Installation and Administration 3 credits, LOI: 3

Students apply the knowledge and skills needed to install and administer Microsoft and Linux systems. Students explain system architecture, system virtualization, installation, server roles, IP addressing and network infrastructure, troubleshooting, monitoring resources, high availability,

system and network security, and disaster recovery. Students will take the CompTIA Server certification exam as part of this course.

Note: This is a new course at LCCC, but is already listed in the UW Transfer guide and is on the books at Eastern Wyoming College and Northwest College

2. New course numbers and/or number of credit hours have been coordinated:
with UW (transfer) ___ Yes ___ No Not Applicable

or WCCC (career technical) ___ Yes ___ No Not Applicable

G.* Can this program be delivered by current faculty? If not, what are the plans, budget and timeline for bringing on needed instructors?

Yes – current faculty have the credentialing and availability to teach this program.

H. Summary of input from and coordination with citizens, business and industry or k-12 education:

This program was developed in close coordination with the Microsoft Datacenter in Cheyenne as well as with input from Greenhouse Data and Dish Network. We have also worked with Southern Virginia Higher Education Center who worked closely with Microsoft to develop a similar program that has seen full enrollment and high employment placement rates since its inception.

This is a generic data center program and does not contain any specific Microsoft curriculum or certifications. This program prepares students for work in a data center as a technician or an IT department as network and computer system administrators, computer systems analysts, database administrators, information security analysts, computer network support specialists, and data warehousing specialists.

In the fall of 2017, an 82 question survey was given to all businesses in Cheyenne, Laramie and the region with the goal of guiding LCCC's computer information system program offerings. Forty-eight businesses responded to the survey. The need for shortened programs with industry credentialing as well as consistent need for graduates with these credentials was noted in the responses.

In November 2017, the proposed data center technician program was reviewed by an advisory board and representatives from the Cheyenne data centers. The feedback was positive with no changes as the proposed curriculum met the industry needs.

Research of similar programs has found no comparison in the Wyoming Community College system or the regional community colleges. Front Range, Aims, Casper, Western Wyoming Community College and Eastern Wyoming Community College offer computer programs, but research on their website finds little to know indication that students in these programs sit for industry certification exams as part of the programs. LCCC incorporated the fees into courses starting in fall 2017 in order to ensure students can afford to take the exams and to better track success rates. Big Bend College in Washington offers a one-year degree but no indication of industry certifications. Cisco offers an online CCT Data Center certificate. Blue Mountain Community College in Oregon offers a data center technician degree but it is 46 credit hours in length, takes three semesters to complete, and does not indicate industry certifications as part of the program. Southern Virginian Higher Education Center was the "model" as noted by Microsoft and is the program that guided LCCC's development of the Data Center Technician Credit Diploma.

The LCCC Advisory Board for Computer Information Systems and Computer Science programs at LCCC consists of eight members of the LCCC staff including the school Dean, administrative assistant, three instructors, the College's Chief Technology Officer, an advisor, and a career center representative. Industry representatives include the Wyoming State Deputy Chief Information Officer, the Director of Engineering at

Echostar, the Information Technology Administrator for the Wyoming Department of Health, the Information Technology Director for Laramie County, the Director of Technology for the Laramie County School District #1, the Information Technology Supervisor for the Board of Public Utilities, a representative from the Wyoming Governor’s Endow Initiative, the Technology officer for Cheyenne Regional Medical Center, the Information Technology Manager for the Laramie County Library System, and representatives from Microsoft, Greenhouse Data, and Dish Network.

I.* **Resources required** to start and sustain the program and the current plan to meet those resource needs through college or other external funds:

These courses are currently being taught at LCCC although they have been re-packaged to be provided in a shortened time frame to meet the needs of a growing datacenter industry and to move students into the workforce in a timelier manner. There are no additional budget requirements at this time. Industry in Cheyenne and LCCC advisory board members have indicated a need for 20 to 30 data center technicians every year to meet the demand of growth as well as employee replacement. This number is sustainable with current faculty employed by LCCC. Growth in the data center industry and marketing to the Front Range of Colorado has the potential to grow need and enrollment.

Future plans include a collaboration with industry and the HVAC program at LCCC to build a mock datacenter. All of the servers, racks, etc. will be donated by Microsoft and other partners. This is in partnership with industry as well as the HVAC program to create a shared lab environment that provides an efficient way of training two different sets of students (CIS and HVAC). Any additional costs (up to \$2,000) will required the seeking of funds through additional resources including other donors and or general fund.

J.* **Projected demand in Wyoming and Nation** for five years from the proposed implementation date (career technical programs):

1. State and National Trends – data includes areas of IT employment such as network and computer system administration, computer systems analysts, database administrators, information security analysts, computer network support specialists, and data warehousing specialists. These are areas graduates of this program are qualified for as well as the datacenter technician jobs as dictated by industry partners in Cheyenne.

United States	Employment		Percent Change	Job Openings
	2014	2024		
	3.9 million	4.4 million	12%	488,500
Wyoming	Employment		Percent Change	Job Openings
	2014	2024		
*see note below	240	263	9.6%	54

Source:

- **National Data Source:** Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook, Dec, 2015 Edition*, <http://www.bls.gov/oco/ocos287.htm>
- Burning Glass: Labor Insights: <https://laborinsight.burning-glass.com/jobs/us#/snapshots/display>
- **State Data Source:** Wyoming Department of Employment Research & Planning http://doe.state.wy.us/LMI/projections/2016/long_term_occupation_projections_2014-24.pdf

Other trend information that would assist the Commission:

*Note: The employment projections in the table above for the state of Wyoming are not in line with what the industry partners in Cheyenne (Microsoft, Dish Network, Greenhouse data, Sierra Trading

Post, and others) are telling us. These industry partners expect more than the projected 9.6% change from 2016 to 2024.. Regional data centers are projecting the need for 60+ new employees starting in October 2018 as they start phase one of a large expansion. This industry is an area for expansion in the Cheyenne region due to the infrastructure built here for high-speed Internet.

According to Burning Glass' reported job postings, the need in Wyoming for employees with these certifications and/or the data center credit diploma was 320 jobs in 2016 (prior to the expansion of at least one major data center in Cheyenne). Of those jobs, 186 were in Cheyenne and 86 were in Casper. These credentials fill jobs in network and computer system administration, computer systems analysts, database administrators, information security analysts, computer network support specialists, and data warehousing specialists. Again, these numbers do not include the data center expansions in Cheyenne projected to start in fall of 2018. Even more of a demand will occur after Microsoft completes its third expansion to the Cheyenne data center.

When adding Colorado to this search in Burning Glass, the job need was 15,897 in 2016 with 15,223 of those just in Cheyenne, Casper and the Colorado Front Range.

2. State and National Wages

Location	Pay Period	2015				
		10%	25%	Median	75%	90%
United States	Hourly	\$17.81	\$22.86	\$30.13	\$39.69	\$50.92
	Yearly	\$37,040	\$47,550	\$62,670	\$82,560	\$105,910
Wyoming	Hourly	N/A	N/A	\$27.39	N/A	N/A
	Yearly	N/A	N/A	\$56,780	N/A	N/A

Source: Bureau of Labor Statistics, Occupational Employment Statistics Survey

- **National Data Source:** https://www.bls.gov/oes/current/oes_nat.htm
- **State Data Source:** https://www.bls.gov/oes/current/oes_wy.htm State Cross-Industry Estimates
Other wage information or comments that would assist the Commission: The above statistics are using occupation code 15-1152 Computer Network Support Specialists. The 10%, 25%, 75%, nor 90% wage information were available for Wyoming, only the median.

According to Glass Door (glassdoor.com) the average base pay for a data center technician in the U.S. is \$61,554 and the range is \$44,000 to \$86,000.

3. Primary student audience identified for this program:

The primary student audience is split between students coming out of high school wanting to quickly enter the workforce in the computer information systems environment and the non-traditional students wanting to be hired and/or advance within the datacenter industry. The plan is to teach this course at times in the late afternoon and evening conducive to working students. This program will also serve those wanting to look at a career change, but whom are on a limited timeframe for education.

4. Anticipated enrollment in the three academic years after WCCC approval (unduplicated headcount) with the basis for the estimate:

15 Year One 15 Year Two 20 Year Three

K. Student recruitment and program marketing strategies to attract

 the broadest range of individual into this specific program:

Recruiting will include traditional recruitment strategies as well as reaching out to workforce development and employment offices to recruit students who are currently unemployed or wanting to change careers in a fast timeframe. Partnerships with industry, including guaranteed interviews, will help recruit their potential employees as well as those looking for continuing education credits. We will ask those industries (Microsoft, Greenhouse, etc.) to include logos on marketing materials to help with promotion of a career path directly to a job. Scholarships designated specifically to this program will help fill the first class. We will also pursue long-term scholarship/grants available for students interested in this program to help with recruitment. Social media and videos of our alumni working at area industry will support recruitment.

L.* Identification of similar programs at Wyoming Community Colleges and an overview of results of discussions with faculty and administrators at the relative college’s curriculum and possible joint projects:

Wyoming Community College Programs (Identify title, degree/certificate and number of credit hours)						
Casper College	Central Wyoming College	Eastern Wyoming College	Laramie County Community College	Northwest College	Northern Wyoming Community College District	Western Wyoming Community College
Computer Security AAS	Computer Technology AAS	Computer Applications Certificate (Word, keyboarding, Microsoft Office)	Cyber Security AAS, Computer Information Systems AAS In progress – Datacenter technician	No AAS	Computer Networking Administration AAS, Cyber Security AAS, IT Support Technician Certificate	No AAS

This datacenter program, in this format, is unique to Wyoming and specific to the need of industry in Cheyenne (a growing industry). This program nests into a two year Computer Information Systems degree option at LCCC.

M. Note available program and course articulations with other likely **transfer institutions in the region, particularly for transfer AAS, AA and AS programs. (Note regional Bachelor of Applied Science transfer options in addition to UW.)**

This is a short credit diploma designed specifically to meet area industry need. Students have the option to continue and complete a two-year associate of applied science degree, which transfers to a bachelor’s of applied science degree at UW. All credits earned in this program will apply to the A.A.S Degree

N. When appropriate, note partnerships with business, industry, associations or agencies that have contributed to the design of the proposed program and/or who will contribute to the delivery of the program.

Microsoft came to LCCC to request this program. Other datacenters in Cheyenne have concurred that this is a need in a condensed version to build a fast growing workforce. We were asked to work with the Southern Virginia Education Center to design this program and this was done. In the fall of 2017, 48 area business (including members of the advisory board) responded to an extensive industry survey which pointed to the need for this degree as well as the soft skills course inclusion in this diploma.

O. Assessment of student learning and completer follow-up per performance indicators. How will the assessment outcomes be used to assure student learning and improve the program?

Students will be able to: successfully pass industry certification CompTIA A+, Server+, and Network+ exams.

Students in the program will sit for three primary certification exams (fee is included in course fees). The exams are CompTIA A+, Network+, and Server+. CompTIA certifications help to train and identify qualified, knowledgeable employees in the IT industry. We will track their scores. Our goal is 80% pass rate, anything less will trigger an assessment of our instructional methods and materials.

P. * Other program information or comments that would assist the commission in making a decision using the Guidelines for Use of this Evaluation Tool found in Appendix A of the 2010 WCCC Statewide Strategic Plan.

As shown above, the demonstrated need is coming from within the industry. In the next year, Microsoft alone will expand its datacenter with the need for nearly 40 new employees in the fall of 2018. Greenhouse and Dish Network (the largest datacenters) are also growing and in need of additional employees. These skills will transfer to any students wanting to work within IT at the state, hospital, education, etc. The industry certifications completed in this program make these students marketable for a wide-variety of careers within the IT industry.

This program addresses Wyoming and regional interests in the following *Ways that are not addressed earlier in this request*:

EDUCATED CITIZENRY – The program supports high demand and high pay occupations, which improves the quality of life for our students and the clients who will be served by their skills.

DIVERSIFIED ECONOMY – This industry is a major part of the Governor’s ENDOW initiative.

WORKFORCE DEVELOPMENT – This will help provide employees for a growing high-tech sector here in Southeast Wyoming. All the aforementioned datacenters, as well as any large organization such as hospitals, government agencies both state and local, school districts, and financial institutions require a well-trained I.T. staff.

EFFICIENT SYSTEMS – We currently have the faculty and space to start this program. We will not offer our computer technician program any longer, as this is designed to replace that with more appropriate curriculum given the workforce needs in or service areas.

ACCOUNTABILITY and IMPROVEMENT – Course assessment data and course evaluations will be compiled by the program instructors. In addition, pass rates on the certification exams will be kept. This data will be evaluated and analyzed by the advisory committee and in our annual program assessment (Aquila) to help ensure continuous improvement. In addition, the college will utilize our Institutional Research Office to develop and deliver a post-job placement survey to both employers and students to identify skill gaps needed that may not have been included in the program. This information will help ensure the program is kept up to date and is meeting industry needs.

OTHER CRITERIA-

- **Labor Needs** – Most datacenters here in Cheyenne are hiring, and frequently ask us for any students who may be interested. These include Microsoft, Green House Data, Dish Network, and Sierra Trading Post.
- **Curriculum Development** – Most is already done, one course CMAP 1940, is on the books at EWC and CWC, and being adapted to be delivered here at LCCC now. We are also revamping the HMDV 1510 course to meet IT needs. Microsoft requested this program, and referred us to Virginia who has a program in place and a Microsoft datacenter in their area.
- **Pathways** – This program leads directly to a career in I.T. as mentioned above. In addition, all credits in this program may be applied to an A.A.S degree in Computer Information Systems
- **Faculty Support** – All CIS faculty support this program and are willing to teach evenings to meet the needs of industry.
- **Recruitment Strategies** – Recruiting will include traditional recruitment strategies as well as reaching out to workforce development and employment offices to recruit students who are currently unemployed or wanting to change careers in a fast timeframe. Partnerships with industry, including guaranteed interviews, will help recruit their potential employees as well as those looking for continuing education credits. We will ask those industries (Microsoft, Greenhouse, etc.) to include logos on marketing materials to help with promotion of a career path directly to a job. Scholarships designated specifically to this program will help fill the first class. We will also pursue long-term scholarship/grants available for students interested in this program to help with recruitment. Social media and videos of our alumni working at area industry will support recruitment.
- **Resource Needs** – We can offer this program without any new resources. We do, however, plan on the creation of a mock datacenter, see above. The mock data center will be used by both the CIS department as well as CTE programs who will work on the electrical and HVAC needs.

*Community colleges are not required to complete sections G, I, J, K, L, or P for **pilot** program requests.

SIGNATURE PAGE

Submitted by V. P. for
Academic Affairs**

Signature Date

Printed Name Title

Approved by the WCC Academic
Affairs Council

Signature Date

Printed Name Title

Approved by Program
Review Committee

Signature Date

Printed Name Title

**Signature by the Community College Vice President for Academic Affairs verifies that institutional curriculum approval processes have been completed and that the Community College Board of Trustees has approved this program request as per institutional policy.

LCCC New Program of Study/Concentration Form

In accordance with Program Development and Approval Procedure, 2.3.1P, this form must be completed to establish the submission of a new credit-bearing program of study or concentration.

1.	Program Contact:	Robert Van Cleave									
2.	Effective Catalog Year:	2018-19									
3.	Summation of Faculty, Dean, and VPAA:	We three discussed this and all agreed to move ahead as soon as possible. This is a high priority for our school and the CIS department.									
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%;"> Authorization to put forward: <input type="checkbox"/> YES <input type="checkbox"/> NO </td> <td style="width: 30%;">Robert Van Cleave</td> <td style="width: 30%;"></td> </tr> <tr> <td></td> <td>Jill Koslosky</td> <td></td> </tr> <tr> <td></td> <td>Clark Harris</td> <td></td> </tr> </table>	Authorization to put forward: <input type="checkbox"/> YES <input type="checkbox"/> NO	Robert Van Cleave			Jill Koslosky			Clark Harris	
		Authorization to put forward: <input type="checkbox"/> YES <input type="checkbox"/> NO	Robert Van Cleave								
			Jill Koslosky								
	Clark Harris										
Date: Click or tap to enter a date.											
Stage One: Identification of Program, Need, Goals and Competencies											
4.	O*NET-SOC Code:	15-1152.00 Computer Network Support Specialists Click or tap here to enter text.									
5.	Rationale for New Program:	We have created this program in close coordination with the Microsoft Datacenter here in Cheyenne. We have also worked with Southern Virginia Higher Education Center who have a very successful similar program in place. It is, however, a generic datacenter program and does not contain any specific Microsoft curriculum or certifications. This program prepares students for work in ANY datacenter or IT department. This industry has been singled out by several state leaders as a desirable growth sector, and is part of the Governor’s ENDOW initiative. This will help provide employees for a growing high-tech sector here in Southeast Wyoming.									
6.	Program Advisory Committee Summary Report:	<p>This fall, an extensive survey, was sent to area industry as well as advisory board members. The survey was answered by 48 industries with indicators showing strong support for this credit diploma in this format (shortened to one semester) as well as strong demand for the soft skills course inclusion. At the same time the survey was in process, CIS Faculty met with Microsoft and other datacenters (at their request) to develop this credit diploma. In consultation with Microsoft training center – Southern Virginia Higher Education Center, this program was modeled after their existing and successful degree. The need for datacenter technicians is growing as industry expands in Cheyenne with an expected new and turnover workforce exceeding 45 employees per year and growing.</p> <p>The last advisory committee meeting was November 17, 2017. The committee reviewed the proposed data center technician credit diploma and were unanimously in support of this program, it’s shortened delivery (one semester) and</p>									

		the addition of the soft skills class. The committee was encouraged to see the incorporation of the exams into the classes and the inclusion of the exam fees in the course fees.
Stage Two: Program Research and Curriculum Development		
7.	Program Duration (number of weeks to complete this program):	16 weeks, 16 credits, 1 semester Click or tap here to enter text.
8.	New Courses and Course/Program fees:	<p>Have all new course numbers and/or prefixes been confirmed by the Course Coordinator? X <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> n/a including CMAP 1940</p> <p>Have MCORs for all new courses been submitted? <input type="checkbox"/> X YES <input type="checkbox"/> NO <input type="checkbox"/> n/a</p> <p>Are fees being requested for this program? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO</p> <p>Are new or revised fees being requested for courses within this program? <input type="checkbox"/> X YES <input type="checkbox"/> NO</p> <p>If yes, provide details and rationale.</p> <p>All courses we offer that prepare students for industry certification exams include the cost of those exams as fees. CMAP 1940 will also include as a fee the cost of taking the CompTIA Server+ exam.</p> <p>The Student Fee Request form is available from the Vice President of Administration and Finance and must be included in this process.</p> <p>This form has been submitted to the school dean: X <input type="checkbox"/> YES</p> <p>A copy of the Student Fee Request form has been attached to this submission: <input type="checkbox"/> YES</p>
Stage Three: Identification of Needed Resources		
9.		<p>Can this program be delivered by current faculty? If not, what are the plans, budget and timeline for bringing on needed instructors?</p> <p>Yes, current faculty have the credentialing and availability to teach all the courses including the new CMAP 1940.</p>
10.		<p>What resources are required to start and sustain the program? What is the current plan to meet those resource needs through the college or other external funds?</p> <p>We can offer this program without any new resources.</p>
11.	Cost of Program:	<p>Total cost of program to a student:</p> <ul style="list-style-type: none"> • Tuition and fees - \$1,750 • Course Fees: \$357 • Books: \$700 <p>Total: \$2,807</p>

		Identify costs associated with the establishment of this program in the table below:		
		Budget Summary	Account Number	Budget Amount
		N/A	Account Number	Amount
		Budget item	Account Number	Amount
		Budget item	Account Number	Amount
		Budget item	Account Number	Amount
		Budget item	Account Number	Amount
		Budget item	Account Number	Amount
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		Budget item	Account Number	Amount
		Budget item	Account Number	Amount
		Budget item	Account Number	Amount
		Budget item	Account Number	Amount
		Budget item	Account Number	Amount
				TOTAL:
Additional comments regarding the cost of program implementation: Click or tap here to enter text.				

Stage Five: Administrative Review

12.	Administrative Procedure 2.1P:	<input type="checkbox"/> X Program meets credits required under Administrative Procedure 2.1P Degrees and Certificates <input type="checkbox"/> Program does NOT meet credits required under 2.1P Degrees and Certificates/Exception Requested A compelling case for the variation must be made. Supporting documentation for the request citing accreditation or other professional certifying agents needs to be attached if applicable.	
13.	VPAA Signed Approval for Exception to Administrative Procedure 2.1P:	SIGNED: Clark Harris	DATE: _____

	Other relevant information: Click or tap here to enter text.
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PROGRAM SEQUENCING

In the first column, please indicate if a course will fulfill a general education requirement and/or if a course is taught in a specific semester, e.g., fall semester only.

PROGRAM SEQUENCING FOR: Datacenter Technician			
1ST SEM./TERM	COURSE NUMBER	COURSE TITLE	CREDITS
	CMAP 1920	Hardware Maintenance	4
	CMAP 1615	Operating Systems	3
	CMAP 1940	Server Installation	3
	CSCO 2000	Beginning Internetworking	3
	HMDV 1510	Professionalism and Soft skills	3
TOTAL CREDITS			16

OTHER information to APPEAR in the catalog:

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CURRICULUM MAPPING

1. List all program competencies in the first column of the table below.
2. Replace CRSE 1, CRSE 2, etc. with program course numbers.
3. For each competency, identify the courses where the competency is Introduced (I), Reinforced (R), Emphasized (E), or Mastered (M).

	CMAP 1920	CMAP 1615	CMAP 1940	CSCO 2000	HMDV 1510*
Students will be able to demonstrate essential knowledge and skills needed to effectively design, configure, manage, and troubleshoot any wired and wireless network.	I,R,E	E, M	E	E	E
Students will be able to effectively support IT infrastructures through the understanding of the most common hardware and software utilized in data centers.	I,R,E	E, M	E	E	E
Students will be able to effectively plan, secure, and maintain IT environments using a variety of server equipment.	I	I	R,E,M	E	E
*We most likely will be adding a competency related to this course.					