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OFF-SITE DELIVERY OF AN EXISTING PROGRAM FORM

Sponsoring Institution (s): University of Central Missouri
Name of Institution (Campus or off-campus residential center in the case of multi-campus institutions).

Program Title: Systems Engineering Technology
Degree/Certificate: Bachelor of Science
Institution Granting Degree: University of Central Missouri
Delivery Site(s): Central Summit Center
Mode of Program Delivery: Face-to-face; Heavy emphasis on lab applications and internships.

Geographic Location of Student Access: **Central Summit Center**

CIP Classification: 15.1202 (Please provide CIP code)
Implementation Date: Spring of 2013
Semester and Year
Cooperative Partners: Metropolitan Community Colleges and Lee Summit R-7 School District

AUTHORIZATION

Michael J. Grelle, Vice Provost	Michael J. Grelle	10-18-12
Name/Title of Institutional Officer	Signature	Date

Michael J. Grelle	660-543-8059
Person to Contact for More Information	Telephone

Rationale for Program

The University of Central Missouri Innovation Campus Program was designed through a collaborative effort of business partners, the Lee's Summit R-7 School District, the Metropolitan Community College and the University of Central Missouri. The goal of this program is to connect businesses to a trained workforce that has specific skill sets required by the companies to help make them competitive in the marketplace and reduce training costs. The Innovation Campus Program also utilizes an accelerated model designed to reduce student debt and increase retention and degree completion.

This customized training initiative is rigorous, relevant and can be utilized with all of the Missouri Strategic Initiative for Economic Growth "Target Clusters" that include Advanced Manufacturing, Energy Solutions, Bio Sciences, Health Sciences & Services and Information Technology.

The overall unique design and development of the curriculum and programming focuses on the identification of specific competencies and skill sets by business partners in collaboration with instructors at the Lee's Summit R-7 Summit Technology Academy, Metropolitan Community Colleges and the University of Central Missouri that are required for employees to be successful in the work place and bridge the gap between skills and workforce demands.

The instructional program is delivered by instructors who utilize inquiry, teaming, real-world problem solving and hands-on activities to assess both the hard and soft skills required by the specific business partners and their industries. Enriching this instruction are several internships beginning in the summer after the student's junior year of high school where business partners can observe and assess the student's abilities in "real-life" activities within the company over a period of two to three years.

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STUDENT ENROLLMENT PROJECTIONS

These calculations are based on extensive feedback and conversations between UCM and our business partners in this venture. Cerner, DST, St. Luke's tell us they should have positions available for the numbers of students listed in Form SE above. UCM plans to expand its business partners in the Kansas City area and beyond to accommodate expected increases in student enrollment.

Year	1	2	3	4	5
Full Time	25	55	90	120	150
Part Time					
Total	25	55	90	120	150

4. Market Demand. The primary impetuses for the initiation of this program came from Exergonix, and the business partners identified in this proposal: Cerner, DST, and St. Luke's Hospital. UCM has developed close ties to many businesses in the Kansas City area and we work closely with these potential employers of our graduates to determine future employment needs and the quality of our graduates who work in their respective organizations. We have been assured by our business partners in this venture that the number of graduates we hope to produce through this program (See Form SE.) will not meet their projected need in the area of systems engineering technology. In addition, the University's quality improvement process requires departments to establish a procedure for regular validation of its student learning outcomes by groups of individuals external to the University. Many programs utilize employers to serve this purpose. A side benefit of this process is that the information gathered from program advisory boards helps UCM identify industry needs and areas with high market demand. The feedback we have received from these employers reveals a shortage of qualified individuals in this area. Furthermore, this program addresses a need expressed by the state of Missouri for more graduates in the areas of science, technology, engineering, and mathematics.

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COLLABORATIVE PROGRAMS

Sponsoring Institutions: University of Central Missouri, Metopolitan Community Colleges (MCC), Lee Summit R-7 School District

Degree program: B. S.
Length of agreement: Open-ended
(open-ended or limited)

1. Which institution(s) will have degree-granting authority?
   MCC will be granting an A.A.S. degree and the University of Central Missouri (UCM) will be granting a B.S. degree.

2. Which institution(s) will have the authority for faculty hiring, course assignment, evaluation, and reappointment decisions?
   Each participating institution will retain the authority to hire its faculty, determine course assignment, and make reappointment decisions. Both MCC and UCM are accredited by the North Central Association's Higher Learning Commission (HLC) and adhere to HLC standards.

3. What agreements exist to ensure that faculty from all participating institutions will be involved in decisions about the curriculum, admissions standards, exit requirements?
   Although no formal agreement has been signed at this time, the proposed curriculum for this program was the result of many collaborative hours of work involving faculty and administrators from all three sectors of education participating in this collaborative program: secondary, 2-year, and 4-year. This group still meets under the direction of Stan Elliott, Program Coordinator.

4. Which institution(s) will be responsible for academic and student-support services, e.g., registration, advising, library, academic assistance, financial aid, etc.?
   This program begins in the summer following a student's sophomore year in high school and continues through degree completion at the University of Central Missouri. Admission is simultaneous to all three institutions, i.e., students who meet admissions standards are admitted to the program and to MCC and UCM while in high school. Advising, library services, academic assistance, and financial aid (if warranted), will be provided by the institution(s) from which the student is taking courses in any given semester.

5. What agreements exist to ensure that the academic calendars of the participating institutions have been aligned as needed?
   No formal agreements have been signed but the curriculum was designed with the respective institutional calendars in mind.

6. In addition to the information provided by each participating institution regarding Financial Projections (Form FP), please address the following items:
    1. How will tuition rates be determined if they differ among the institutions?
    Tuition rates for the Lee's Summit R-7 Summit Technology Academy, MCC and UCM will be determined by each of the individual institutions utilizing current procedures based upon governing boards, CPI, etc. and will be applied to the student as he/she progresses through the program.

    2. Has a formal agreement been developed regarding cost-sharing policies? If yes, please include it as part of the proposal. If no, please summarize the current understanding between all parties and the plans for developing a formal agreement.
    A formal written agreement for cost-sharing among the three educational institutions does not currently exist. However, each institution is responsible for tracking costs associated with the program and utilizing funding at their respective levels to cover the costs. An annual review of program costs at each institution will occur annually in June.

    3. What arrangements, if any, have been made for exchange of money between participating institutions?
    The only exchange of money between participating institutions at this point is the billing of dual-credit hours from MCC to UCM for reimbursement. These billings and subsequent exchanges of money are processed per established business and accounting procedures utilized by MCC and UCM.

7. What commitments have been made by all participants to evaluate the program systematically?
The participating institutions are DIRECTED by their respective oversight bodies (DESE for secondary ed and MDHE/HLC for higher ed to conduct student and program assessment and to document how such assessment information has been used to improve program delivery. In addition, both 2-year and 4-year partners perform 5-year program reviews on all of their academic programs. No formal written agreement exists to engage in program evaluation beyond what is described above, however, the faculty have already begun discussions on assessment of the identified student learning outcomes.

8. If one institution wishes to discontinue the program, what agreements exist for terminating the offering?
Although no formal agreement currently exists for terminating the program, an annual program review will occur in June with each of the three participating institutions in attendance. An institution desiring to discontinue a program would make that intention known at the time of the review. HLC requires its members to engage in a teach-out should the program have to be discontinued for any reason.

Form PS - Program Structure

PROGRAM STRUCTURE

A. Total credits required for graduation: 120

B. Residency requirements, if any: 30 hours overall at UCM – 20 of these must be upper-level hours; 15 hours in the major must be taken from UCM – 9 of these major hours be upper level; last 12 hours must be taken from UCM. These are the same residency requirements that exist for all degree programs offered by the University of Central Missouri.

C. General education: Total credits: 48

Courses (specific courses OR distribution area and credits):

Written Communication	6 cr.
Oral Communication	3 cr.
Mathematical Reasoning	3 cr.
Life & Physical Sciences	7 cr.
Technology	2-3 cr.
Social and Behavioral Science	9 cr.
Humanities and Fine Arts	9 cr.
Cultural Interaction	3 cr.
Personal Interaction	3 cr.
Integrative Studies	3 cr.

D. Major requirements: Total credits: 72 total hours in major

CSIS 111	3cr.	CSIS 110	3cr.	CSIS 151	3cr.
CSIS 161	6cr.	CSIS 175	3cr.	CSIS 178	3cr.
CSIS 170	3cr.	BSAD 127	3cr.	CSIS 172	3cr.
CSIS 152	3cr.	CSIS 143	3cr.	BSAD 120	3cr.
CSIS 290A	3cr.	CIS 3665	3cr.	CIS 4695	3cr.
CIS 4680	3cr.	CIS 4685	3cr.	NET 3068	3cr.
CIS 4610	3cr.	NET 4060	3cr.	CIS 4665	3cr.
NET 4062	3cr.	NET 4063	3cr.		

E. Free elective credits: (Sum of C, D, and E should equal A.)

F. Requirements for thesis, internship or other capstone experience: A number of courses are tied to internships (e.g., SPDR 102, BSAD 127, Business Writing, ENGL 101), and the program will also include internships in the summer, and a senior level internship.

G. Any unique features such as interdepartmental cooperation: This program requires close cooperation between several departments in the College of Business and the School of Technology at the University of Central Missouri as well as the faculty from Lee Summit R07 School District and the Metropolitan Community Colleges and the participating business partners.

MDHE Financial Projections
MIC Narrative

The Missouri Innovation Campus (MIC) program is a collaborative effort of business partners, the Lee's Summit R-7 School District, Metropolitan Community College (MCC) and the University of Central Missouri (UCM). Expenditures and revenue generated by the MIC are specific to each of the educational entities.

The first MIC cohort of 21 students is currently enrolled. Tuition expenses for these students and future cohorts are paid by their sending districts to the R-7 School District Summit Technology Academy (STA) and sending districts receive state aid (ADA funds) through the Department of Elementary and Secondary Education to off-set the STA tuition costs. Staffing and equipment costs are covered by the Lee's Summit R-7 School District.

While enrolled as juniors and seniors at the STA, MIC cohort students are also enrolled as MCC students and are working to complete their AAS degree via dual credit and dual enrolled courses and also considered UCM students. Standard tuition and textbook fees will be charged to the students. Staffing and equipment needs for the AAS are provided by MCC.

The last two years of the four year, year-round MIC program will be coursework through the University of Central Missouri leading to the completion of a BS degree in Systems Engineering Technology. Except for the first cohort of 21 students, standard tuition and fees rates will be charged to the students for this part of the MIC program. UCM will be responsible for the staffing and equipment needs to deliver years three and four of the program. Depending on where the UCM portion of the program is delivered, either on-campus or at a satellite location, there could be one-time equipment costs associated with MIC program delivery.

In addition to tuition and fee charges, the University may receive grant funds from CDBG to support this initiative and financial support from the business partners that

participate in the internship portion of the program. These funds will be utilized to support administrative expenses of the program and scholarship assistance to the program students.

Although the MIC program is a collaborative effort, the respective educational institutions will monitor, track and evaluate program revenue sources and expenditures to ensure program viability.

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PROGRAM CHARACTERISTICS AND PERFORMANCE GOALS

Institution Name University of Central Missouri
Program Name BS Systems Engineering Technology
Date 10/12/2012

(Although all of the following guidelines may not be applicable to the proposed program, please carefully consider the elements in each area and respond as completely as possible in the format below. Quantification of performance goals should be included wherever possible.)

Student Preparation

- Any special admissions procedures or student qualifications required for this program which exceed regular university admissions, standards, e.g., ACT score, completion of core curriculum, portfolio, personal interview, etc. Please note if no special preparation will be required.
  Students are admitted to this program as rising juniors in high school. Acceptance into this program, as determined by the Lee Summit R-7 School District, results into automatic admission into the University of Central Missouri.

- Characteristics of a specific population to be served, if applicable.
  Students selected for this program must demonstrate a commitment to systems engineering technology and attending school on a year-long basis. These students must agree to complete a prescribed curriculum and meet admissions standards as determined by the Lee Summit R-7 School District.

Faculty Characteristics

- Any special requirements (degree status, training, etc.) for assignment of teaching for this degree/certificate.
  The participating institutions will employ faculty who possess the appropriate training, credentialing, and degrees as required and recommended for their institution.

- Estimated percentage of credit hours that will be assigned to full time faculty. Please use the term "full time faculty" (and not FTE) in your descriptions here.
  85+%

- Expectations for professional activities, special student contact, teaching/learning innovation.
  These students will participate extensively in practica/internships in order to allow them to develop and be assessed in the outcomes that have been identified for this program. These practica begin the second summer of the program, i.e., following their junior year and high school, and continue for the remainder of their degree program.

Enrollment Projections

- Student FTE majoring in program by the end of five years.
  190

- Percent of full time and part time enrollment by the end of five years.
  190

Student and Program Outcomes

- Number of graduates per annum at three and five years after implementation.
  None after three years, average of 50 per year after five years.

- Special skills specific to the program.
  A set of specific skills have been co-defined for this program by the faculty from the participating institutions and employees from our business partners. See Attachment A for a complete list of the major specific skills to be developed and assessed in this program.

- Proportion of students who will achieve licensing, certification, or registration.
  NA

- Performance on national and/or local assessments, e.g., percent of students scoring above the 50th percentile on normed tests; percent of students achieving minimal cut-scores on criterion-referenced tests. Include expected results on assessments of general education and on exit assessments in a particular discipline as well as the name of any nationally recognized assessments used.
  All students must take and pass a nationally normed general education test (ETS's PP exam) as a condition for graduation. It is expected that 80- 85 percent of the students who complete this degree program will score above the 50th percentile on this assessment due to the high caliber of the students who will be in this program. Assessmetn in the major will be performance based for the most part and conducted primarily in a work setting involving application exercises.

- Placement rates in related fields, in other fields, unemployed.
  100% for those who successfully complete the program.

- Transfer rates, continuous study.
  Due to the cohort nature and high likelihood of employment following degree completion, the rate of transfer is expected to be minimal.

Program Accreditation

- Institutional plans for accreditation, if applicable, including accrediting agency and timeline. If there are no plans to seek specialized accreditation, please provide reasons.

UCM will seek approval for this program by the HLC as soon as the program is approved by CBHE. At this time we are not seeking any specialized accreditation but will do so under ABET as soon as the program has been in existence long enough to qualify for accreditation in Computer Systemes Technology.

Alumni and Employer Survey

- Expected satisfaction rates for alumni, including timing and method of surveys.
  Given the high relevancy of the curriculum, as guaranteed by the high input from our business partners and the high likelihood of employment, we expect very high satisfaction rates. We plan to administer follow-up surveys to both graduates from this program and their employers following the first year of employment and every three years thereafter.

- Expected satisfaction rates for employers, including timing and method of surveys.
  We expect very high satisfaction rate from employers as they have played a key role in the definition of the outcomes that drive the curriculum and the key role they will play in the internship/practica portions of the degree. These students will not only learn general knowledge and skills related to this field of study, but also proprietary knowledge and skill specifically related to the company that will employ them. These factors should lead to very high satisfaction rates.

9. Accreditation Plans for Systems Engineering Technology Program

The University of Central Missouri plans to apply for accreditation by ABET in Computer Engineering Technology as soon as possible. In order to make application, the program will need to be in effect for an amount of time to allow for several cohorts to graduate as the criteria call for documented evidence of student learning, continuous improvement, modifications to curriculum based on feedback, and other factors that require information collected over time. This accreditation is in line with the proposed CIP classification 15.1202 Computer Technology/Computer Systems Technology.

10. Institutional Characteristics. The University of Central Missouri is well equipped to support the proposed program. The University and its partners, the Lee's Summit R-7 School District, Metropolitan Community College (MCC), the University of Central Missouri (UCM), Cerner, DST, and St. Luke's Hospital currently have the requisite faculty, staff, and equipment to successfully deliver this program. Expenditures and revenue generated by the MIC are specific to each of the educational entities.

Tuition expenses for the first cohort of high school students and future cohorts are paid by their sending districts to the R-7 School District Summit Technology Academy (STA) and sending districts receive state aid (ADA funds) through the Department of Elementary and Secondary Education to off-set the STA tuition costs. Staffing and equipment costs are covered by the Lee's Summit R-7 School District.

In addition to tuition and fee charges, the University may receive grant funds from CDBG to support this initiative and financial support from the business partners that participate in the internship portion of the program. These funds will be utilized to support administrative expenses of the program and scholarship assistance to the program students.

Although the MIC program is a collaborative effort, the respective educational institutions will monitor, track and evaluate program revenue sources and expenditures to ensure program viability.

Briefing Paper

Board of Governors Meeting
Plenary Session
September 21, 2012

From:	Dr. Charles Ambrose, President
Prepared by:	Dr. Michael Grelle, Vice Provost for Institutional Effectiveness & Assessment
Presented by:	Dr. Deborah Curtis, Provost and Vice President for Academic Affairs
Subject:	B.S. Systems Engineering Technology
Disposition:	**Action**

Objective:

To gain Board approval for the proposed B.S. degree in Systems Engineering Technology to be offered through our consortium with Lee's Summit R-7, MCC, UCM, and various business partners.

Background of Issue:

In response to a charge given to an ad hoc curriculum committee by the President's Rapid Response Team for the Missouri Innovation Campus (MIC), a group of faculty, staff, administrators, and employees from Cerner, DST, and St. Luke's Hospital met regularly this spring and summer to define the student learning outcomes and curriculum that define this proposed B. S. degree in Systems Engineering Technology. This is an accelerated degree program with students beginning their coursework in the summer following their sophomore year in high school. Students in this program will complete all requirements for their high school diploma and an A.A.S. degree from MCC as they move through the program. It is intended that students proceed as a cohort with a goal of receiving a baccalaureate degree by the end of what would normally be the sophomore year in college.

Attached are copies of the proposed curriculum and a timetable for degree completion. Also attached are the student learning outcomes or skill sets for the major that were developed and approved by the members of the ad hoc curriculum group, which included four full-time faculty from UCM, four full-time faculty from Metropolitan Community College (MCC), two staff from the Lee's Summit R-7 School District (i.e., the Assistant Superintendent, Director of Secondary Instruction and the Director of the Summit Technology Academy), and employees from our business partners. The group worked hard to ensure the curriculum in this proposed program addressed all of the general education outcomes of UCM's general

education program, and knowledge and skills identified by the participating faculty in addition to those requested by our business partners.

Funding Source:

This program does not require the hiring of additional faculty at this time. However, the University is committed to ensuring there are no tuition charges to the students in this first cohort.

Supporting Reasons and Timing for the Recommendation:

Students in the program's first cohort began taking courses this summer and will have their initial work placement (internship) in the summer of 2013. Although students have not and will not be taking courses from UCM until next summer at the earliest, it is imperative we gain approval by the CBHE and the Higher Learning Commission (HLC) as soon as possible as program approval by the HLC is a precondition for offering this program. We cannot allow students to be taking courses from UCM without the approval of both the CBHE and the HLC. The proposed degree program is unique in that it involves a consortium of partners not normally seen by the HLC. Because of its uniqueness, it may take longer than normal for the HLC to review and approve this proposed degree program. We should not delay in sending this program forward for evaluation.

Potential Concerns Arising from the Recommendation and Steps Needed to Address Them:

The major concern, expressed above, is that students begin taking courses from UCM prior to our obtaining approval to offer the degree program from the HLC. The paperwork for the HLC has been prepared and will be submitted to the HLC upon approval by Missouri's CBHE.

Management Recommendation:

Management recommends that the Board of Governors approve the establishment of a B.S. degree in Systems Engineering Technology contingent upon CBHE and HLC approval.

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New Task ID	Category	Type of Skill	Technology/Knowledge Areas	Specific Task	Yr 1 Outcomes: Prior to Internships	Year 2-3 Outcomes: Through Internships, Classrom, Projects
1	Combined Skills	All	Issue Management	Issue Updates in queue system through Resolution.	none	demonstrate the specific task during internship
2	Combined Skills	All	Issue Management	operate SRM Service Record Management environment.	none	demonstrate the specific task during internship
3	Combined Skills	All	Issue Management	execute Standards Procedure for Issues determination.	none	demonstrate the specific task during internship
4	Combined Skills	All	Networking	can Allocate IP addresses	explain task concept	demonstrate the specific task during internship
5	Combined Skills	All	OS	CPU Usage	Understand CPU concepts; file systems, logical and physical volumes, volume groups	Recognize CPU usage issues, tools, educated guess at causes of usage issues
6	Combined Skills	All	Issue Management	produce solutions for troubleshooting and resolution to most system issues, finding root cause	none	demonstrate the specific task during internship
7	Combined Skills	All	Issue Management	Prevent problems from happening again by implementing a final specific fix for the particular issue.	none	demonstrate the specific task during internship
8	Combined Skills	All	Issue Management	explain proactive technical identification and the advantage of prevention vs response.	none	demonstrate the specific task during internship
9	Combined Skills	All	Issue Management	Managing and resolving Issues/Service Requests	respond to SR, triage appropriately	investigate SR and complete/close or forward as
10	Combined Skills	All	OS	Memory Usage	Understand Memory concepts	Recognize & analyze I/O performance, memory usage issues, tools, educated guess at causes of usage issues
11	Combined Skills	All	Issue Management	Service Request tracking systems/processes (create, modify SR's)	Explain issue tracking system and processes, importance to clients and business, basics on how to	Use tools/process to appropriately document service request investigations and actions to resolution or next
12	Combined Skills	All	Remote Access	RDP, VPN (Virtual Private Network)	Explain remote access concepts and options/tools, protocols and reasons for it	Utilize tools to connect remotely
13	Combined Skills	All	Remote Access	recognize and can explain Virtual Private Network (VPN)	explain task	explain VPN
14	Combined Skills	All	Remote Access	recognize the concept of VPN clients.	explain task concept	explain VPN
15	Combined Skills	All	Remote Access	Remote Desktop Protocol (RDP)	conceptual knowledge of RDP and why we have it	use it
16	Combined Skills	Desktop, Networking	Windows / Networking	use the Command Prompt window to use command line tools such as Ping and ipconfig.	use the Command Prompt window to use command line tools such as Ping and ipconfig.	
17	Combined Skills	Desktop, Networking	Windows / Networking	implement Domain name System (DNS) on Microsoft® Windows Server	implement Domain name System (DNS) on Microsoft® Windows Server	
18	Combined Skills	Desktop, System Administration	Networking	Create a remote access policy for wireless clients.	Create a remote access policy for wireless clients.	
19	Combined Skills	Desktop, System Administration	Windows	Basic hardware/system maintenance	use System Information to view details about the windows computer's hardware configuration, components, and drivers.	
20	Combined Skills	Desktop, System Administration, Networking	Networking	Create bulk NAT	explain task concept	demonstrate the specific task during internship
21	Combined Skills	Desktop, System Administration, Networking	Networking	DNS Management	Understand DNS and WINS	Create, Modify and Remove a DNS Zone and Record
22	Combined Skills	Desktop, System Administration, Networking	Networking	Create Radius Connection.	Create Radius Connection.	
23	Combined Skills	Administration,	Networking	Create NAT's	Create single nat	Create bulk NAT
24	Combined Skills	Desktop, System Administration, Networking	Networking	Create, Modify and Remove a DFS Link	explain task concept	demonstrate the specific task during internship
25	Combined Skills	Desktop, System Administration, Networking	Networking	Create, Modify and Remove a DNS Record	explain task concept	demonstrate the specific task during internship
26	Combined Skills	Desktop, System Administration, Networking	Networking	Create, Modify and File Shares and DFS	Create, Modify and Remove File Share	Create, Modify and Remove a DFS Link
27	Combined Skills	Desktop, System Administration, Networking	Networking	Establish command controls over SSH, SCP and SFTP using PuTTY	Establish command controls over SSH, SCP and SFTP using PuTTY	
28	Combined Skills	System Administration, Database	Oracle / OS	control CRS Cluster Ready Services.		
29	Combined Skills	System Administration, Database	OS	install, Complete Failover, install Patches, Troubleshooting Failover,		
30	Combined Skills	Desktop, System Administration	Networking	configure ETC host File adding a dns zone to an entry to resolve fqdn.	none	demonstrate the specific task during internship
31	Combined Skills	Desktop, System	Networking	configure, add entries in the proper format, understanding the purpose	Understand hosts file and lmhosts file usage. configure	Understand when to use DNS over hosts file.
32	Combined Skills	Desktop, System Administration	Networking / Windows	configure Windows OS Network protocols (i.e. TCP/IP).	Discuss protocols and IPv4 and IPv6	
33	Combined Skills	Desktop, System Administration	Networking / Windows	configure a NIC and connect to an Ethernet lan in windows.	Understand what items should be configured to connect a device to the LAN.	

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New Task ID	Category	Type of Skill	Technology/Knowledge Areas	Specific Task	Yr 1 Outcomes: Prior to Internships	Year 2-3 Outcomes: Through Internships, Classrom, Projects
34	Combined Skills	Desktop, System Administration	OS / Printing	Control and share Printer Builds in a multiplatform	none	demonstrate the specific task during internship
35	Combined Skills	System Administration, Networking	Networking	explain IP Allocation	explain task concept	
36	Combined Skills	System Administration, Networking	Networking	IP sub netting and broadcast domains	explain IP allocations, sub netting, broadcast domains, different modes of SFTP	
37	Combined Skills	System Administration, Networking	Networking	explain the different modes of SFTP.	explain task concept	
38	Combined Skills	System Administration, Networking	Networking / OS	troubleshoot basic network connection problems.	Learn troubleshooting methodology to understand and resolve network connectivity problems.	Utilize commandline tools and Windows Network Settings to resolve connectivity issues.
39	Combined Skills	System Administration, Networking	Networking / OS	examine Network performance and trace network traffic.	Understand Network performance Metrics	Utilize perfmon to manage Network performance.
40	Database	Databases	Database	provide records to tables		
41	Database	Troubleshooting	Issue Management	monitor current Oracle SR's (update tickets provide additional information to Oracle, FTP a file to a site)	none	demonstrate the specific task during internship
42	Database	Databases	Oracle	conduct Database Space Management (Datafiles)	none	demonstrate the specific task during internship
43	Database	Databases	Database	Design and create database	general DB structure and concepts, explain relational da	create databse using DBCA or SQLplus session
44	Database	Databases	Oracle	identify and explain Oracle objects.	explain task concept	
45	Database	Databases	Oracle	Create New Tablespace	general concept	daily activity of intern; determine datafile name/size
46	Database	Databases	Oracle	determine Datafile name/Size in tablespace:	none	demonstrate the specific task during internship
47	Database	Databases	Oracle	explain Oracle process management	explain task concept	
48	Database	Databases	Oracle	find running scripts in db:	none	demonstrate the specific task during internship
49	Database	Databases	Oracle	look at Oracle alert log,	none	demonstrate the specific task during internship
50	Database	Databases	Oracle	Manage shadow upgrades and patches	general concepts, lab installations	basic kernel installations and patches
51	Database	Databases	Database	Database backup/restore	general backup and restore concepts	monitoring and running backups
52	Database	Databases	Oracle	shadow during database issues	none	demonstrate the specific task during internship
53	Database	Databases	Oracle	add datafiles	none	demonstrate the specific task during internship
54	Database	Databases	Oracle	Discover solution for Oracle (OEM & Metalink)	general concepts	monitor database space issues, table size, object issues,
55	Database	Databases	Database	Explain primary and secondary keys	explain task concept	
56	Database	Databases	Oracle	install a new Oracle Enterprise Management Agent	general concept	Install OEM agent
57	Database	Databases	Oracle	install Oracle Patches	none	demonstrate the specific task during internship
58	Database	Databases	Oracle	CRS Cluster Ready Services/DB Startup/Shutdown	general concepts, what parts of oracle are engaged at e	shutdown and startup services for database, listener and
59	Database	Databases	Oracle	Restore and Recover Database	none	demonstrate the specific task during internship
60	Database	Databases	Oracle	view and modify the sga	know different components of SGA	ID SGA components in database
61	Database	Databases	Oracle / Millennium	Employ primary and foreign keys, Constraints	explain task concept	demonstrate the specific task during internship
62	Database	Databases	Database	Audit DBA Toolkit	general concepts of what is being monitored; create dia	hands-on check of crontab jobs, dbms jobs, run weekly r
63	Database	Databases	Oracle / MQ	cycle listener (stopping and starting) (there are both MQ and Oracle listeners)	none	demonstrate the specific task during internship
64	Database	Databases	Oracle / SQL	find SQL text in Oracle:	none	demonstrate the specific task during internship
65	Database	Databases	Oracle Tools	manage the use of Oracle tools for monitoring Database space and table	none	demonstrate the specific task during internship
66	Database	Databases	Database	recognize Databases concepts and administration	general concepts	know the structure of the database such as memory, da
67	Database	Databases	Database	Explain relational database	explain task concept	
68	Database	Databases	Database / Oracle	access the database via sqlplus and use basic queries.	ability to perform specific task	
69	Database	Databases	Oracle	query oracle objects.	ability to perform specific task	
70	Database	Databases	Oracle	use Oracle's SQLPlus command line interface to the Oracle database	ability to perform specific task (Dupe of 68,69?)	
71	Database	Databases	Database	Print a data sheet		demonstrate the specific task during internship
72	Database	Databases	Database	Query the database	select statements	alter database, alter system statements and when to us
73	Database	Databases	Database	Install DBA Required Jobs (CCL's 'dba_toolkit_menu' program) - many	general concepts	hands-on installation of jobs
74	Database	Databases	Database	Retrieve information and create reports		demonstrate the specific task during internship
75	Database	Databases	Database	Show the fundamentals of using database.	explain task concept	
76	Database	Databases	Database	demonstrate the ability to create a file using database software.		demonstrate the specific task during internship
77	Database	Databases	Database	create a diagram of a weekly database operational checklist (space,		demonstrate the specific task during internship
78	Database	Databases	Database	Investigate database issues	general troubleshooting concepts	add datafiles, id users in dbase based on process ID, con
79	Database	Databases	Database	view user processes in the database.		demonstrate the specific task during internship
80	Database	Databases	Database / OS / Oracle	run weekly reports in Unix systems and Oracle		demonstrate the specific task during internship
81	Database	Troubleshooting	Issue Management	review past Oracle SR's		demonstrate the specific task during internship
82	Desktop	Network Access	Active Directory	Account Creation (front-end)	understand active directory	create accounts, memberships, and local user accounts
83	Desktop	Operating Systems	Windows	map and connect printers in Print Manager.	ability to perform specific task	

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New Task ID	Category	Type of Skill	Technology/Knowledge Areas	Specific Task	Yr 1 Outcomes: Prior to Internships	Year 2-3 Outcomes: Through Internships, Classrom, Projects
84	Desktop	Operating Systems	Windows	Map network drives and navigate the folder structure in windows.	know difference between network and local drive	know difference between mapping with drive letter vs.
85	Desktop	Network Access	Active Directory	local user accounts	understand access given to local users and tools required, create local accounts, assign access	
86	Desktop	Operating Systems	Windows	Windows Domain Passwords/Security	understand complexities, security, timeframe to change	use active directory to change/reset
87	Desktop	Operating Systems	Windows	demonstrate a working knowledge of Windows.	ability to perform specific task	
88	Desktop	Operating Systems	Windows	Tools and utilities to manage windows functions	know built-in tools	know third-party tools (SCCM)
89	Desktop	Operating Systems	Windows	log into Windows OS in a domain based network environment.	ability to perform specific task	
90	Desktop	Operating Systems	Windows	Setup and establish a Remote Assistance connection as both requestor	know how to configure remote desktop access	use remote access to access a client, know policy on acce
91	Desktop	Operating Systems	Windows	Use Event Viewer to view detailed entries about system and program		demonstrate the specific task during internship
92	Desktop	Operating Systems	Windows	Determine best recovery method. Pre-entry: understanding recovery	understanding recovery vs reimage options	perform backup, restore, redeploy or a recovery
93	Desktop	Operating Systems	Windows	Windows Task Manager	understand and can perform cycle explorer.exe; know h	find problem processes and apps and end as needed
94	Desktop			Image Management	conceptual understanding of images	imaging utilities and other apps
95	Desktop	Network Access	Active Directory	delete user accounts using active directory (frontend)		demonstrate the specific task during internship
96	Desktop	Network Access	Active Directory	Active Directory Management	Manage domain user accounts, group policy (local, security, application, etc), directory relationships, delete/deac	
97	Desktop	Network Access	Active Directory	manage group policy (local, security, application, etc. policy) (front end)		demonstrate the specific task during internship
98	Desktop	Network Access	Active Directory	manage Server Active Directory Relationships (frontend)		demonstrate the specific task during internship
99	Desktop	Networking	Networking	Implement DHCP on a workstation.	understand IP addresses (static vs. dynamic), how to allo	TCP/IP protocol stack
100	Desktop	Operating Systems	Windows	wireless networks	understand wireless entry and how to connect	understand security issues related to wireless networks
101	Desktop	Operating Systems	Windows	Windows OS desktop environment config	OS configuration, post install	domain and workgroup concepts
102	Desktop	Operating Systems	Windows	Windows OS Accessories (Notepad, Calc, Defrag, Control Panel, Utilities,	understand windows OS accessories and can use	use utilities to optimize performance
103	Desktop	Operating Systems	Windows	Windows SW installation	simple software installations	custom sw install
104	Desktop	Operating Systems	Windows	Windows Device Manager	understand device mgr tool and scan	add/remove hardware drivers, ID conflicts
105	Desktop	Operating Systems	Windows	Use Registry Editor (Regedit) to make changes to Windows registry files.	understand windows registry file concepts and associate	modify registry files
106	Desktop	Operating Systems	Windows	Windows Keyboard short-cuts	understand basic default short-cuts	create custom short-cuts
107	Desktop	Operating Systems	Windows	Windows Print Manager	know where to go to get to the print manager; understa	understand access requirements to delete a job, add/re
108	Desktop	Operating Systems	Windows	find problem processes and applications in Windows OS Task Manager		demonstrate the specific task during internship
109	Middleware	Web Services	Websphere	build a Scripted WAS Server (frontend)		demonstrate the specific task during internship
121	Networking	Networking	Networking	Modify ACL (Single)	explain task concept	demonstrate the specific task during internship
122	Networking	Networking	Networking	Modify ACL (Bulk)	explain task concept	demonstrate the specific task during internship
123	Networking	Networking	Networking	create a VPN Access Point	explain task concept	demonstrate the specific task during internship
124	Networking	Networking	Networking	Modify DNS Zone	explain task concept	demonstrate the specific task during internship
125	Networking	Networking	Networking	implement Private and Public IP addresses.	explain task concept	demonstrate the specific task during internship
126	Networking	Networking	Networking / Hardware	explain Circuit Capacity and Sizing (T1 DS3 OC3)	explain task concept	
127	Networking	Networking	Networking / OS	Troubleshoot Network Latency	explain task concept	demonstrate the specific task during internship
128	Networking	Networking	Networking / OS	troubleshoot connectivity WAN Circuits	explain task concept	demonstrate the specific task during internship
129	Networking	Network Access	Remote Access	configure Virtual Private Networks (VPN).	explain task concept	demonstrate the specific task during internship
130	Networking	Networking	Networking	Modify NAT	explain task concept	demonstrate the specific task during internship
131	Networking	Networking	Networking	Modify Radius Connection	explain task concept	demonstrate the specific task during internship
132	Networking	Networking	Networking	recognize and can explain DFS Link	explain task concept	
133	Networking	Networking	Networking	Reclaim IP addresses	explain task concept	demonstrate the specific task during internship
134	Networking	Networking	Networking	recognize and able to explain DNS.	explain task concept	
135	Networking	Networking	Networking	recognize and able to explain static and dynamic IP addressing.	explain task concept	
136	Networking	Networking	Networking	recognize and can explain (NAT) Network Address Translation	explain task concept	
137	Networking	Networking	Networking	recognize and can explain Access Control List	explain task concept	
138	Networking	Networking	Networking	recognize and can explain DNS Zones	explain task concept	
139	Networking	Networking	Networking	recognize and can explain File Share	explain task concept	
140	Networking	Networking	Networking	recognize and understands Radius (IAS)	explain task concept	
141	Networking	Networking	Networking	recognizes and can explain DNS Records	explain task concept	
142	Networking	Networking	Networking	Remove DNS Zone	explain task concept	demonstrate the specific task during internship
143	Networking	Networking	Networking	Remove NAT	explain task concept	demonstrate the specific task during internship
144	Networking	Networking	Networking	Remove Radius Connection	explain task concept	demonstrate the specific task during internship
145	System Administration	Operating Systems	Cloud Computing	Cloud computing	understand cloud computing concepts	
146	System Administration	Operating Systems	Linux	Evaluate Hardware Requirements for Linux installation	explain task concept	demonstrate the specific task during internship
147	System Administration	Operating Systems	Linux / Admin	Linux user accounts & groups	Understand UID and GID concepts, Create users and gro	Define learning permissions & privileges that apply to gr
148	System Administration	Disaster Recovery	Disaster Recovery	implement a disaster planning and recovery toolkit	explain task concept	demonstrate the specific task during internship
149	System Administration	Operating Systems	Linux / Command Line	Linux Command Line	Navigate through a hierarchical directory structure, edit a text file, provide permissions for files	
150	System Administration	Operating Systems	Linux / Command Line	provide permissions for files in Linux	demonstrate the specific task	
151	System Administration	Operating Systems	Linux / Command Line	edit a text file in Linux (VI editor)	demonstrate the specific task	
152	System Administration	Operating Systems	Linux / Command Line	Linux Logs	understand default of OS, ID log locations	read config file to know where logs are written
153	System Administration	Operating Systems	Linux / Command Line	passwords/system security	Understand how to modify your own password	Modify other users' passwords, understand password pc
154	System Administration	Operating Systems	Linux / Command Line	Identify editors on the Linux system (VI).	Use VI to edit, save, quit a file	use additional concepts and commands

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New Task ID	Category	Type of Skill	Technology/Knowledge Areas	Specific Task	Yr 1 Outcomes: Prior to Internships	Year 2-3 Outcomes: Through Internships, Classrom, Projects
155	System Administration	Operating Systems	Linux / Command Line	Tar up (zip) and extract files	demonstrate the specific task	Tar up (zip) and extract files
156	System Administration	Hardware	Hardware	explain Firmware Upgrades (switch or other hardware device)		explain firmware upgrades (switch or other hardware de
157	System Administration	Operating Systems	Linux / Printing	Configure printing/print queues	understand print queues; queuing mechanism	create/modify/manipulate/delete print ques
158	System Administration	Operating Systems	Linux / Printing	recognize and understand Unix based print queuing mechanism	explain task concept	
159	System Administration	Operating Systems	Linux / Resource Managemen	Linux Memory management	Understand Memory concepts	Recognize Memory usage issues, tools, educated guess
160	System Administration	Disaster Recovery	Disaster Recovery	plan a strategy for recovering data losses using outlined process		
161	System Administration	Operating Systems	Linux / Resource Managemen	Measure and monitor CPU performance and utilization (linux)	explain task concept	demonstrate the specific task during internship
162	System Administration	Operating Systems	Linux / Resource Managemen	manage disk usage and clean-up tools	Use df, du, and rm	identify largest space usage
163	System Administration	Operating Systems	Linux / Scripting	scripting		explain scripting and uses; run scripts (Korn, sh)
164	System Administration	Operating Systems	Linux / Storage	Linux Storage management	Explain file systems, logical and physical volumes, volume groups	
165	System Administration	Operating Systems	Linux / Storage	manage storage in the Linux file system		manage storage in the Linux file system (create, delete,
166	System Administration	Operating Systems	Linux / Storage	Create Linux volume groups/storage	understand LVM and RAID	create volume groups, logical volumes & file systems
167	System Administration	Troubleshooting	Issue Management	Identifying and implementing system Hardening strategies to reduce		understand need for incident reduction and relationship
168	System Administration	Networking	Networking	Utilize Command Line tools	run IPCONFIG and explain output, use telnet vs. SSH	Use of netstat.exe, tracert, and other network command
169	System Administration	Networking	Networking	use telnet vs. SSH,	demonstrate the specific task	
170	System Administration	Networking	Networking / Linux	SSH (Putty) terminal in Linux	Use client	configure server side
171	System Administration	Networking	Networking / OS	plan for proactive space needs on the system.		
172	System Administration	Disaster Recovery	Disaster Recovery	plan/review a disaster recovery toolkit		
173	System Administration	Networking	Networking / Storage	track Disk consumption and predict allocation.	Manage local disk utilization, monitor, and fragmentatio	track Disk consumption and predict allocation.
174	System Administration	Networking	Networking / Storage	explain Storage Area Network (SAN)	Understand SAN, NAS, and local storage	explain Storage Area Network (SAN)
175	System Administration	Networking	Networking / Storage	manage provision bulk storage for client data.		manage provision bulk storage for client data.
176	System Administration	Operating Systems	OS	analyze I/O performance		demonstrate the specific task during internship
177	System Administration	Operating Systems	OS	Schedule batch style tasks.	Understand task scheduling and it's benefits	schedule and remove currently scheduled tasks (SCH, AT
178	System Administration	Operating Systems	Linux	Linux Server	Explain use of ports and terminal emulation	
179	System Administration	Operating Systems	OS	locate and review HA Log Files.		demonstrate the specific task during internship
180	System Administration	Operating Systems	OS	Enhance functionality in current scripts. "Special" intern function.		
181	System Administration	Operating Systems	OS	Explain performance troubleshooting. Grad: Understanding how to do		
182	System Administration	Operating Systems	OS	Implement and create a Logical Volume. SEE ABOVE for Linux.	Know what disk manager is, change letter. Understand RAID	
183	System Administration	Operating Systems	OS	explain background processes.	explain task concept	
184	System Administration	File Maintenance	FTP	FTP and SFTP	transfer a file with FTP and SFTP, add/remove SW in SW	create, modify, remove FTP service; recognize and explai
185	System Administration	Operating Systems	OS	scripting		Understand loops, branching, basic programming, how t
186	System Administration	Operating Systems	OS	execute Firmware Upgrades		
187	System Administration	Operating Systems	OS / Linux	Schedule cron jobs on the Back End.	Understanding cron and AT	
188	System Administration	Hardware	Server Administration	Physical Server set-up	perform manual installation and configuration of Windo	Understand differences between 32bit and 64bit Windo
189	System Administration	Operating Systems	Linux	install Linux operating system (desktop environment)		install Linux operating system (desktop environment)
190	System Administration	Networking	Server Administration	network a new server.	network a new server	
191	System Administration	Operating Systems	Server Administration	install hot patches and upgrades without rebooting the server.	install hot patches and upgrades without rebooting serv	Understand and demonstrate use of patching tools, WSU
192	System Administration	Operating Systems	Server Automation	Server Automation/Powershell	understand server automation concepts	able to leverage pre-existing jobs
193	System Administration	Operating Systems	Virtualization	Hardware virtualization	understanding hypervisor & cost benefits	using a system in a virtual environment and understandi
194	System Administration	Operating Systems	Windows	Server Upgrades	complete windows server upgrade	
195	System Administration	Operating Systems	Windows	understanding what the registry is	understanding reports and imports navigation	loading hives and scripting across multiple nodes
196	System Administration	File Maintenance	FTP	add and remove Software in Software Repository		demonstrate the specific task during internship
197	System Administration	File Maintenance	FTP	recognize and can explain Software Repositories		demonstrate the specific task during internship
198	System Administration	File Maintenance	FTP / Networking	recognize and can explain Client FTP Service		demonstrate the specific task during internship
199	System Administration	File Maintenance	FTP / Networking / OS	Create, Modify and Remove FTP Service		demonstrate the specific task during internship
200	System Administration	Operating Systems	Linux	Mail Service		explain & create mail service
201	System Administration	Operating Systems	Linux	creates mail service in Linux	remove - too specific?	
202	System Administration	Operating Systems	Linux	Install Linux operating system (both database and application hosting	perform installation, understand RPM's	understand different methods of installation
203	System Administration	Operating Systems	Linux	identify and apply OS patches in Linux.		demonstrate the specific task during internship
225		Databases	Bigdata/Hadoop/NoSQL	Query Hadoop and Bigdata		Research Bigdata and Hadoop
226		Databases	Db2	Establist connectuion to db2 database and perform select/insert/update/delete acitivy on a table		demonstrate the specific task during internship
227		Databases	Microsoft SQL Server	Establist connection to MSSQL database and perform select/insert/update/delete acitivy on a table		demonstrate the specific task during internship
228		Databases	mySQL	Establist connection to MySQL database and perform select/insert/update/delete acitivy on a table		demonstrate the specific task during internship
229	Middleware	Web Services	High Availability	Build and configure web server and container (Jboss/Websphere) enviornment	Understanding web server and container software including Java Virtual Machine (JVM) and high availability fundamentals	Build and configure a high availability enviornment for web and container software (Jboss/Webshere) and have an understanding of network configuration requirements

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New Task ID	Category	Type of Skill	Technology/Knowledge Areas	Specific Task	Yr 1 Outcomes: Prior to Internships	Year 2-3 Outcomes: Through Internships, Classrom, Projects
230	Middleware	Web Services	Multi-tier Application	Build and configure application and web servers including connections to the backend	Understand application and web server software and network data flow	Build and configure load balancing tools mod_jk, gossip router, and wl-proxy etc...
231		Networking	Network Automation	Automate network configuration across enterprise network.	Understanding of what Network automation is and what are the key benefits	entry level familiarity with scripting tools: Shell scripting, XML, Perl, TCL, API's and awareness of Network Automation Packages such as HPNA, BBNA, Software Defined Networking (SDN).

Year 4 Outcomes: Final Preparation for Graduation and Full Time Work
Understand factors that can impact CPU usage and troubleshoot issues
advanced troubleshooting skills and ability to identify
Understand factors that can impact memory usage and troubleshoot issues
Understand & ID ways to prevent issues and optimize issue mgmt systems and processes to improve client
Understand factors that impact ability to connect remotely, business & security impacts; create remote access policy
explain VPN
explain VPN
Backup and Restore DNS Records
control CRS Cluster Ready Services.
install, Complete Failover, install Patches, Troubleshooting Failover,

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			Credit		Credit		Credit		Credit		Credit	
	Prereq	Summer 2012	Hours	Fall 2012	Hours	Spring 2013	Hours	Summer 2013	Hours	Fall 2013	Hours	
				(HS Jr Year)		(HS Jr Year)				(HS Sr Year)		
STA	Com Apps II	HS Grad Req		CHAOS II (Online DC)		Network Essentials (DC)		Mtg HS Grad Req		ENGL 101		
	Artic or DC	CHAOS I (F2F or Online)		IT Essentials (DC)				& Summer Pre-req		Gen Ed (DC*)		
		Artic or DC		HS Grad Req (DC*)		HS Grad Req (DC*)						
				HS Gen Ed Req								
MCC	CSIS 115 (3)	CSIS 111	3	CSIS 151	3	CSIS 175, 178	6	SPDR 102	3	ENGL 101	3	
		MATH 110 or 120	3	CSIS 161, 174	6			CSIS 170	3	CSIS 172	3	
		CSIS 110 by exam	3	MATH 110/120 or higher	3			Mgt Int BSAD 127	3	CSIS 152	3	
										Internship (year long)		
UCM	CIS 1600			NET 1060(3)		NET 2060(3)				ENGL 1020 (3)		
		BTE 1210		NET 1061(3)		NET 2061(3)				CIS 2665 (CSIS 152 & 161)		
INT								Internship (w/ SPDR 102)		Internship (w/ ENGL)		
								Internship (w/ BSAD 127)				
Hrs per sem			9		12		6		9		9	
Total Hours			9		21		27		36		45	
	Courses in column highlighted in same color are equivalent.											
	Hours highlighted in yellow refer to general education courses.											
	DC* indicates Dual Credit course, if available, at home school.											

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		Credit		Credit		Credit		Credit		Credit		Credit		Credit
	Spring 2014	Hours	Summer 2014	Hours	Fall 2014	Hours	Spring 2015	Hours	Summer 2015	Hours	Fall 2016	Hours	Spring 2016	Hours
	(HS Sr Year)													
STA	ENGL 215													
	Gen Ed (DC*)													
MCC	ENGL 215	3	BSAD 120	3	CSIS 290A	3								
	CSIS 143	3	Gen Ed	3	HIST (Am Inst)	3								
	Internship	3												
UCM	CIS 3650				History (MCC/UCM)		CIS 4680	3	CIS 4610	3	NET 4060	3	NET 4062	3
					CIS 3665	3	CIS 4685	3			CIS 4665	3	NET 4063	3
					GEN ED	3	NET 3068	3	Internship	3	GEN ED	6	ICAP	3
					Programming	3	GEN ED	6	(UCM req)				GEN ED	3
INT	Internship (w/ ENGL)		Internship (w/ BSAD)		Internship (w/ CSIS 290A)									
Hrs per sem		9		6		15		15		6		12		12
Total Hours	Goal:	54		60	Goal:	75		90		96		108		**120**
	HS GRADUATION				MCC GRADUATION								UCM Graduation	