



COURSE OUTLINE

CENTRE FOR COMPUTER TECHNOLOGY

COURSE NAME: Data Center Construction Fundamentals

COURSE CODE: COMP1162

CREDIT HOURS: 56 Hours

PREREQUISITES:

COREQUISITES:

PLAR ELIGIBLE: YES (X) NO ()

EFFECTIVE DATE:

PROFESSOR: Suri Nagavarapu **OFFICE #:** C430

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NOTE TO STUDENTS: Academic Departments at George Brown College will NOT retain historical copies of Course Outlines. We urge you to retain this Course Outline for your future reference.

FOR OFFICE USE ONLY		
ORIGINATOR: _____	_____	_____
	SIGNATURE	DATE
CHAIR: _____	_____	_____
	SIGNATURE	DATE
DATE OF REVISION: _____		

EQUITY STATEMENT: George Brown College values the talents and contributions of its students, staff and community partners and seeks to create a welcoming environment where equity, diversity and safety of all groups are fundamental. Language or activities which are inconsistent with this philosophy violate the College policy on the Prevention of Discrimination and Harassment and will not be tolerated. The commitment and cooperation of all students and staff are required to maintain this environment. Information and assistance are available through your Chair, Student Affairs, the Student Association or the Human Rights Advisor.

STUDENT RESPONSIBILITIES: Students should obtain a copy of the *Student Handbook* and refer to it for additional information regarding the grading system, withdrawals, exemptions, class assignments, missed tests and exams, supplemental privileges, and academic dishonesty. Students are required to apply themselves diligently to the course of study, and to prepare class and homework assignments as given. Past student performance shows a strong relationship between regular attendance and success.

COURSE DESCRIPTION:

This course is designed to introduce the students to data centre architecture and its realization; as an extension of Equipment Deployment, Interconnection and Wiring, Network Documentation and Project Management courses. Data Centre Construction Fundamentals brings together several critical network and construction skills. Working in several groups, the students will prepare the term project of constructing an enterprise data centre.

ESSENTIAL EMPLOYABILITY SKILLS:

As mandated by the Ministry of Training, Colleges and Universities essential employability skills (EES) will be addressed throughout all programs of study. Students will have the opportunity to **learn (L)** specific skills, to **practice (P)** these skills, and/or **be evaluated (E)** on the EES outcomes in a variety of courses. The EES include communication, numeracy, critical thinking & problem solving, information management, interpersonal and personal skills. The faculty for this course has indicated which of the EES are either Learned (L), Practiced (P) or Evaluated (E) in this course:

Skill	L	P	E	Skill	L	P	E
1. to communicate clearly, concisely and correctly in the written, spoken and visual form that fulfills the purpose and meets the needs of the audience		x	x	7. to locate, select, organize and document information using appropriate technology and information sources	x	x	x
2. to respond to written, spoken or visual messages in a manner that ensures effective communication		x	x	8. to show respect for the diverse opinions, values, belief systems, and contributions of others	x		
3. to execute mathematical operations accurately	x	x		9. to interact with others in groups or teams in ways that contribute to effective working relationships and the achievement of goals	x	x	x
4. to apply a systematic approach to solve problems		x	x	10. to manage the use of time and other resources to complete projects	x	x	x
5. to use a variety of thinking skills to anticipate and solve problems.	x	x	x	11. to take responsibility for my actions, decisions and consequences			
6. to analyze, evaluate, and apply relevant information from a variety of sources	x	x					

COURSE OUTCOMES:

Upon successful completion of this course the students will have reliably demonstrated the ability to:

1. Perform Site Surveys
2. Develop actual network designs, budgets and project plans for the implementation project
3. Apply project management principles in a team environment on a complex project
4. Analyze data centre requirements for environmental control, redundant power and network management.
5. Install and test a complete data network involving a “real world” standard architecture.
6. Generate network test and support plans
7. Plan and conduct disaster recovery planning
8. Design the network, survey the available data centre space, specify changes required, install the hardware infrastructure (racks, cable management, etc),
9. Install and interconnect the equipment, configure the equipment, test the network.
10. Perform disaster recovery planning and six sigma infrastructure requirements

DELIVERY METHODS / LEARNING ACTIVITIES:

The instructional methods of this course are comprised of class lectures using high quality multi media projection system, lecture-demonstration, lecture-discussion, hands-on lab exercises, site visits, project assignments and team presentations.

LIST OF TEXTBOOKS AND OTHER TEACHING AIDS:

Required:

1. “Enterprise Data Center Design and Methodology” by Rob Snevely, ISBN 0-13-047393-6, Prentice Hall PTR
2. “Build the Best Data Center Facility for Your Business” by Douglas Alger, ISBN 1-58705-182-6, Cisco Press, June 2005
3. “Microsoft Visio V. 2002 Inside Out” by Eaton, Nanette, J., Microsoft Press, ISBN 0-7356-1285-4
4. “Network Management Concepts and Practice: A Hands-on Approach” by J.Richard Burke, ISBN 0-13-032950-9 , Pearson Education Inc.
5. Web Sites of American Power Conversion (www.apcc.com) and Sun Microsystems (www.sun.com)
6. Handouts given by Professor

Recommended / Optional:

TESTING POLICY:

1. A score of zero will be recorded for a missed assignment or examination unless the student presents the professor with official substantiation of the absence the first day she or he returns to class.
2. Students are responsible for reading the appropriate material before classes so that they may benefit from their practical activities and examples.

ASSIGNMENT POLICY:

1. Students are responsible for keeping a back-up copy of each assignment submitted.
2. All assignments submitted should adhere to the documentation standards distributed by the professor.

3. Students should check the assignment handouts for the instructions for submission.

EVALUATION SYSTEM:

Assessment Tool:	Description:	Outcome(s) demonstrated:	EES demonstrated:	Date / Week:	% of Final Grade:
Labs	Lab Activities	2,4,5,6,8	2,4,7	Wks 1-15	30
Assignments	Four assignments on topics of importance	1,3,6,8	1,4,5,6	Ongoing	10
Group Presentation	Covers enhancements in Windows 2008 Server	1,2,3	7,9	Wk 15	10
Quiz 1	Multiple choice test that evaluates concepts from the topics covered in Weeks 1-3	2,4,8,9	2,4,5	Wk 4	5
Quiz 2	Multiple choice test that evaluates concepts from the topics of Weeks 9-11	2,4,8,9	2,4,5	Wk 12	5
MidTerm Exam	Test containing Multiple choice, short answer etc questions on topics covered in weeks 1-6	2,4,8,9,10	2,4,5,6	Wk 7	20
Final Exam	Test containing Multiple choice, short answer etc questions on topics covered in weeks 1-14	2,4,8,9,10	2,4,5,6	Wk 15	20
				TOTAL:	100%

GRADING SYSTEM

The passing grade for this course is: **D**

A+	90-100	4.0	B+	77-79	3.3	C+	67-69	2.3	D+	57-59	1.3	Below 50	F	0.0
A	86-89	4.0	B	73-76	3.0	C	63-66	2.0	D	50-56	1.0			
A-	80-85	3.7	B-	70-72	2.7	C-	60-62	1.7						

Excerpt from the College Policy on Academic Dishonesty:

The *minimal* consequence for submitting a plagiarized, purchased, contracted, or in any manner inappropriately negotiated or falsified assignment, test, essay, project, or any evaluated material will be a grade of zero on that material.

To view George Brown College policies please go to www.gbrownc.on.ca/policies

TOPICAL OUTLINE:

Wk	Topic / Task	Outcome	Content / Activities	Resources
1	Data Center Design	1 to 10	Introduction to Data Center design Philosophy, criteria and guidelines	Chapters 1&2 (ref 1)
2	Designing a Data Center and determine its capacities	1,2,8	In-depth understanding of data center design process, structural layout, security and management technologies, RLU implementation and practice for capacities determination	Chapters 3&4 (ref 1)
3	Site Selection, Servers	1,2,7,8	Site Selection factors and considerations Server selection	Chapter 5 and other material
4	Implementing a raised floor	2,5,8	Anatomy of a raised floor, floor load capacity and fire rating, Server Presentations	Chapter 6 (ref 1)
5	Power distribution, Network cabling and devices infrastructure	5,6,8,9	Power distribution systems, Network infrastructure, Server Farms, Layer 2/3 devices	Chapters 7,9 (ref 1)
6	Avoiding hazards, Environmental contaminants, codes, construction	1,4,5,9,10	Solutions to deal with fire, flooding, earthquakes and other disasters, Contaminant types, sources, effects and counter measures, Enterprise data center codes	Chapters 11,12,13 (ref 1) and handout
7	MIDTERM Examination			
8	<i>INTERSESSION WEEK</i>			
9	Presentations of Selected Data Centers	1-10	Group Presentations of Large Data centers	
10	Network Documentation Tools	6,8,9	Microsoft Visio introduction, getting started, Creation of Network Diagrams	Chapters 1-4, 6,7 (ref 3)
11	Network Management Overview	5,8	Networking components, Overview of Network Management, Network implementation and management strategies	Chapters 1-3 (Ref 4)
12	Configuration of Client-Server and Infrastructure components	5,8	Configuration of clients/servers running different operating systems, devices such as hubs, switches, routers etc.	Chapters 4-5(Ref 4)
13,14	Network Management Protocols	5,8	SNMP, MIB, RMON1, RMON, SNMPV2, V3, Trends	Chapters 6-9, 12 (Ref 4)
15	FINAL Examination			
<p><i>For information on withdrawing from this course without academic penalty, please refer to the College Academic Calendar: http://www.georgebrown.ca/Admin/Registr/PSCal.aspx</i></p>				