HCC | HOUSTON COMMUNITY COLLEGE

Digital Information & Technology Center of Excellence
Computer Systems Networking Department (Cybersecurity, Linux, Microsoft, Cisco, BCIS)

ITNW1313 Computer Virtualization; VMware vSphere: Install, Configure, manage [V7] Course Syllabus

Fall 2021 | 12 Weeks (08.23.2021 - 12.12.2021) | Online
3 Credit Hours | 96 hours per semester
Class will be ONLINE Anytime- WW
Instructor Contact Information

Instructor: Scott Hillman

Office Phone: 713-718-6465

Office Hours: By appointment
HCC Email: scott.hillman@hccs.edu
Office Location: West Loop Center and Central Campus

Instructor's Preferred Method of Contact
Canvas inbox or HCC Email: scott.hillman@hccs.edu

Fall 2021 Modalities

FC
The course modality of this class is *flexCampus*. Faculty will hold class as per the assigned schedule, and students will be assigned to attend in person or online each class period utilizing Canvas Eagle Online. On the days when you are not assigned to be in person, it is expected that you will ate nd virtually (online). Attendance will be taken each class period.

WS
The course modality of this class is *online on A Schedule*. Faculty will hold class as per the assigned schedule, and students will attend online each class period utilizing Canvas Eagle Online. Attendance will be taken each class period.

HL
This class is a *Lab-Based* course. Faculty will hold class on-campus in the Laboratory/Studio as per the assigned schedule, and students will attend in person each class period. Attendance will be taken each class period.

WW

The course modality of this class is *online Anytime*. Faculty will instruct this class as a traditional online course utilizing Canvas Eagle Online. Attendance will be taken through completion of online assignments.

This class of ITNW 1313 – 16610 is WW modality which is online anytime.

What's Exciting about This Course

" *https://youtu.be/uhuetPL5PA8*"

My Personal Welcome

Welcome I will be your instructor for this course. The main method of communications are Canvas inbox or email to scott.hillman@hccs.edu

Prerequisites and/or Co-Requisites

ITNW 1313 requires college-level reading and writing skills. Research indicates that you are most likely to succeed if you have already taken and passed ENGL 1301. The minimum requirements for enrollment in ITNW 1313 include placement in college-level reading (or take INRW 0420 or ESOL 0360 as a co-requisite). If you have enrolled in this course having satisfied these prerequisites, you have a higher chance of success than students who have not done so. Please carefully read and consider the repeater policy in the HCCS Student Handbook.

Canvas Learning Management System

This course will use Canvas (https://eagleonline.hccs.edu) to supplement in-class assignments, exams, and activities. Please follow all the modules on Canvas and be sure to start with the first module titled "Getting started." You will use Canvas to access all the course assignments.

HCCS Open Lab locations may be used to access the Internet and Canvas. **USE FIREFOX OR CHROME AS THE INTERNET BROWSER**.

HCC Online Information and Policies
Here is the link to information about HCC Online classes including the required Online Orientation for all fully online classes: http://www.hccs.edu/online/

Scoring Rubrics, Sample Assignments, etc. The scoring
rubric is:
Midterm Exam: 20%
Final Exam: 20%
Labs: 40%
Discussions: 20%

Instructional Materials

Students shall buy **eBook** and **eLab** from HCC Bookstore under
https://hccs.bncollege.com/shop/hccs-central/page/find-textbooks Or from Kivuto portal:
eLab "VMware vSphere Install Configure and Manage 7.0 Labs (6-Months Access)"
from: https://e5.onthehub.com/WebStore/OfferingDetails.aspx?o=071605e9-a638-eb11-8132000d3af41938&ws=0749cb89-743a-de11-b696-0030485a8df0&vsro=8

eText "VMware IT Academy: VMware vSphere Install, Configure and Manage v7.0"
from: https://e5.onthehub.com/WebStore/OfferingsOfMajorVersionList.aspx?pmv=7a57c95f-6595-ea11-812b-000d3af41938&cmi_mnuMain=ce6a65f7-6fcf-e111-971cf04da23e67f6&cmi_mnuMain_child=02dd9b08-834f-e511-940fb8ca3a5db7a1&cmi_mnuMain_child_child=8ca2fd2e-9f88-e511-9412b8ca3a5db7a1&ws=0749cb89-743a-de11-b696-0030485a8df0&vsro=8

Other Instructional Resources

Tutoring
HCC provides free, confidential, and convenient academic support, including writing critiques, to HCC students in an online environment and on campus. Tutoring is provided by HCC personnel in order to ensure that it is contextual and appropriate. Visit the HCC Tutoring Services website for services provided.

Libraries
The HCC Library System consists of 9 libraries and 6 Electronic Resource Centers (ERCs) that are inviting places to study and collaborate on projects. Librarians are available both at the libraries and online to show you how to locate and use the resources you need. The libraries maintain a large selection of electronic resources as well as collections of books, magazines, newspapers, and audiovisual materials. The portal to all libraries' resources and services is the HCCS library web page at http://library.hccs.edu.

Supplementary Instruction
Supplemental Instruction is an academic enrichment and support program that uses peer assisted study sessions to improve student retention and success in historically difficult courses. Peer Support is provided by students who have already succeeded in completion of the specified course, and who earned a grade of A or B. Find details at http://www.hccs.edu/resources-for/current-students/supplemental-instruction/.

Course Overview

VMware vSphere: Install, Configure, manage features intensive hands-on training that focuses on installing, configuring, and managing VMware vSphere® v7.0, which includes VMware ESXi™ 6.7 and VMware vCenter Server™ v7.0 This course prepares you to administer a vSphere infrastructure for an organization of any size and forms the foundation for most other VMware technologies in the software-defined data center.

Implement and support virtualization of clients of servers in a networked computing environment. This course explores installation, configuration, and management of computer virtualization workstation and servers.

Upon completion, students will be able to:

- *Install and configure virtual machine managers*
- *Create and network virtual machines and set priorities for accessing resources*
- *Move and clone virtual machines*
- *Ensure high availability for applications within virtual machines*

Core Curriculum Objectives (CCOs)

ITNW1313 satisfies the computer science requirement in the HCCS core curriculum. The HCCS Computer Systems Networking Discipline Committee has specified that the course address the following core objectives:

- **Critical Thinking**: Students will demonstrate the ability to engage in inquiry and analysis, evaluation and synthesis of information, and creative thinking by completing a written assignment such as a book report, research paper, or essay.
- **Communication Skills**: Students will demonstrate effective development, interpretation and expression of ideas through written, oral, and visual communication by completing a written assignment such as a book report, research paper, or essay.
- **Quantitative and Empirical Literacy**: Students will demonstrate the ability to draw conclusions based on the systematic analysis of topics using observation, experiment, and/or numerical skills by completing textbook reading assignments, completing assignments, and answering questions on quizzes and exams that pertain to Course Student Learning Outcome #2 below.
- **Social Responsibility**: Students will demonstrate cultural self-awareness, intercultural competency, civil knowledge, and the ability to engage effectively in regional, national, and global communities by completing textbook reading assignments, completing assignments, and answering questions on quizzes and exams that pertain to Course Student Learning Outcome #4 below.
- **Personal Responsibility (PR)**: To include the ability to connect choices, actions and consequences to ethical decision-making.

Program Student Learning Outcomes (PSLOs)

Can be found at: https://www.hccs.edu/programs/areas-of-study/science-technologyengineering- math/computer-systems-networking--telecommunications/

Course Student Learning Outcomes (CSLOs)

Objectives: • Describe the software-defined data center
- Deploy an ESXi host and create virtual machines
- Describe vCenter Server architecture
- Deploy a vCenter Server instance or VMware vCenter Server™ Appliance™
- Use vCenter Server to manage an ESXi host
- Configure and manage vSphere infrastructure with VMware vSphere® Client™ and VMware vSphere®

Web Client
- Configure virtual networks with vSphere standard switches

- Use vCenter Server to manage various types of host storage: VMware vSphere® VMFS, NFS, virtual SAN,   and Virtual Volumes
- Manage virtual machines, templates, clones, and snapshots
- Create a vApp
- Describe and use the content library
- Migrate virtual machines with VMware vSphere® vMotion®
- Use VMware vSphere® Storage vMotion® to migrate virtual machine storage
- Monitor resource usage and manage resource pools
- Use VMware vRealize™ Operations Manager™ to identify and solve issues through analytics and alerts
- Manage VMware vSphere® High Availability and VMware vSphere® Fault Tolerance
- Use VMware vSphere® Replication™ and VMware vSphere® Data Protection™ to replicate virtual
   machines and perform data recovery
- Use VMware vSphere® Distributed Resource Scheduler™ clusters to improve host scalability
- Use vSphere distributed switches to improve network scalability
- Use VMware vSphere® Update Manager™ to apply patches and perform basic troubleshooting of ESXi hosts, virtual machines, and vCenter Server operations

Learning Objectives

Learning Objectives for each CSLO are mapped to each module on Canvas.

Student Success

(Distance Education Only)
Not all people are well suited for independent study.
A general set of guidelines is used to determine if you should be accepted into the Distance Education sections of ITNW1313.
These guidelines will require you to:
Be self-motivated or self-starter: This usually means having completed at least 6 credit hours of college and having a cumulative GPA of 2.5 or better. Exceptions must be approved by the instructor.
Meet the course prerequisites: This means being ready for ENGL1301 and MATH1314 (i.e. no remediation needed) and high school computer literacy or equivalent.
Already be familiar with microcomputers by having used:
Windows XP, Windows, and or Windows 7, Windows 8.1, Windows 10, Linux, (any of these) Understand Files and folders. This means that you should be able to create, rename, delete, locate, move and copy files and folders. You should also be familiar switching between the icon view and the details view in My Computer/Windows Explorer. A basic understanding of the above file management skills is required.
Have access to computer resources:

either, have adequate hardware with software installed on a computer at home or work including adequate Internet access with DSL or cable speed or, be able and willing to use open lab times provided by the college to complete the course.

Please note, the network or computer going down the night before an assignment is due is NOT a valid excuse. Assignments have ample lead time before the Cut off Dates to allow for these types of situations. Start work early and submit your work early and you should not have a problem.

Instructor and Student Responsibilities

<u>As your Instructor, it is my responsibility to</u>**:**
- Provide the grading scale and detailed grading formula explaining how student grades are to be derived
- Facilitate an effective learning environment through learner-centered instructional techniques
- Provide a description of any special projects or assignments
- Inform students of policies such as attendance, withdrawal, tardiness, and making up assignments
- Provide the course outline and class calendar that will include a description of any special projects or assignments
- Arrange to meet with individual students before and after class as required

<u>As a student, it is your responsibility to</u>**:**
- Attend class online.
- Participate actively by reviewing course material, interacting with classmates, and responding promptly in your communication with me
- Read and comprehend the textbook
- Complete the required assignments and exams
- Ask for help when there is a question or problem
- Keep copies of all paperwork, including this syllabus, handouts, and all assignments
- Attain a raw score of at least 50% on the departmental final exam
- Be aware of and comply with academic honesty policies in the <u>HCCS Student Handbook</u>

Assignments, Exams, and Activities

Discussions
Students are required to give in their own words a discussion of the topics covered in each chapter Students must give a summation of the values of the concepts and demonstrate understanding. A one sentence comment will be graded as a "F". More than a paragraph is expected.

Labs

Provided by instructor. NDGNetlab

Grading Formula

Midterm Exam   20 % Final Exam
                    20 %
Labs   40 % Discussion 20 %

Grade	Total Points
A	90+
B	80+
C	70+
D	60+
F	<60

Incomplete Policy:

In order to receive a grade of Incomplete ("I"), a student must have completed at least 85% of the work in the course. In all cases, the instructor reserves the right to decline a student's request to receive a grade of Incomplete.

HCC Grading Scale can be found on this site under Academic Information: http://www.hccs.edu/resources-for/current-students/student-handbook/ Course Calendar

Week 1 & 2	TBA	1 Course Introduction ○ Introductions and course logistics ○ Course objectives ○ References and resources
Week 3	TBA	2 Software-Defined Data Center ○ Introduce components of the software-defined data center ○ Describe where vSphere fits into the cloud architecture ○ Install and use vSphere Client ○ Overview of ESXi
	TBA	3 Creating Virtual Machines ○ Introduce virtual machines, virtual machine hardware, and virtual machine files ○ Create and work with virtual machines and templates
Week 4	TBA	4 vCenter Server ○ Introduce the vCenter Server architecture ○ Deploy and configure vCenter Server Appliance ○ Use vSphere Web Client ○ Manage vCenter Server inventory objects and licenses
	TBA	5 Configuring and Managing Virtual Networks ○ Describe, create, and manage standard switches ○ Configure virtual switch security and load balancing policies ○ Create, configure, and manage vSphere distributed switches, network connections, and port groups
Week 5 & 6	TBA	6 Configuring and Managing Virtual Storage ○ Introduce storage protocols and storage device types ○ Discuss ESXi hosts using iSCSI and NFS storage ○ Create and manage VMFS and NFS datastores ○ Introduce VMware Virtual SAN™ ○ Introduce Virtual Volumes

	TBA	7 Virtual Machine Management o Use templates and cloning to deploy new virtual machines o Modify and manage virtual machines o Perform vSphere vMotion and vSphere Storage vMotion migrations o Create and manage virtual machine snapshots o Create vApps o Introduce the types of content libraries and how to deploy and use them
Week 7 & 8	TBA	8 Resource Management and Monitoring o Introduce virtual CPU and memory concepts o Configure and manage resource pools o Describe methods for optimizing CPU and memory usage o Use various tools to monitor resource usage o Create and use alarms to report certain conditions or events o Identify and troubleshoot virtual machine resource issues o Introduce vRealize Operations Manager for data center monitoring and management
Week 9 & 10	TBA	9 vSphere HA and vSphere Fault Tolerance o Explain the vSphere HA architecture o Configure and manage a vSphere HA cluster o Use vSphere HA advanced parameters o Introduce vSphere Fault Tolerance o Enable vSphere Fault Tolerance on virtual machines o Introduce vSphere Replication o Use vSphere Data Protection to back up and restore data
	TBA	10 Host Scalability o Describe the functions and benefits of a vSphere DRS cluster o Configure and manage avSphere DRS

		cluster o Work with affinity and anti-affinity rules o Use vSphere HA and vSphere DRS together for business continuity

Week 11	TBA	11 vSphere Update Manager and Host Maintenance ○ Use vSphere Update Manager to manage ESXi patching
		○ Install vSphere Update Manager and the vSphere Update Manager plug-in
		○ Create patch baselines ○ Use host profiles to manage host configuration compliance
		○ Scan and remediate hosts
	TBA	12 Installing vSphere Components
		○ Install ESXi
		○ Introduce vCenter Server deployment options
		○ Describe vCenter Server hardware, software, and database requirements
		○ Discuss installation of vCenter Server Appliance and a vCenter Server instance
Week 12		○ Demonstrate vCenter Server installation
		Final Exam
	TBA	Final Examination will be Online **- TBA**

Syllabus Modifications

The instructor reserves the right to modify the syllabus at any time during the semester and will promptly notify students in writing, typically by e-mail, of any such changes.

Instructor's Practices and Procedures

Missed Assignments

Due dates are established to prevent "Procrastination" on your part.
It is "strongly suggested" that students set a regular study schedule.
This will allow you to complete materials on or before the "Due Date".
Students that work ahead will be able to handle unexpected situations that will occur in their life.
Assignments not received, and quizzes not taken by the "Due Date" for a Learning Module will not be received and will be given the grade of zero.
Assignments must be submitted, and quizzes taken by 11:55:00 PM (on OUR CLOCK) on the "Due Date" when the module MUST be submitted.

Remember, you can always turn in assignments before the "Due Date", but never after the "Due Date".

If you are having problems completing course materials on time (by the "Due Date"), chat with the instructor. If you have over scheduled your life (working 40 hours a week and taking 15 credit hours of college instruction), have computer problems (my computer is broke, and I don't know when it will get fixed) or don't have a textbook.

 – DON'T BE SURPRISED IF THE INSTRUCTOR SIMPLY SAYS, "You should withdraw from the course". In other words, you might not get much sympathy and the instructor will expect materials to be submitted by the "Due Date". However, under unusually circumstances (death or illness in the family and other items that greatly disrupt your life), the instructor might be willing to accept late materials if you make contact in advance!

The Final Exam Distance Ed classes require an on-campus visit.

Final Examination is scheduled for: TBA, at the J. Don Boney building on the Central Campus which is located at 1300 Holman Room JDB206. The exam will be limited to 2 hours unless a student has ADA accommodations. If you are an ADA student and are to receive 3 hours for testing time, then you must arrive no later than 5:00pm.) Potential conflicts should be resolved individually with your Instructor. You must pass the final exam. **Academic Integrity**

A student who is academically dishonest is, by definition, not showing that the coursework has been learned, and that student is claiming an advantage not available to other students. The instructor is responsible for measuring each student's individual achievements and for ensuring that all students compete on a level playing field. Thus, in our system, the instructor has teaching, grading, and enforcement roles. You are expected to be familiar with the University's Policy on Academic Honesty, found in the catalog. What that means is: If you are charged with an offense, pleading ignorance of the rules will not help you. Students are responsible for conducting themselves with honor and integrity in fulfilling course requirements. Penalties and/or disciplinary proceedings may be initiated by College System officials against a student accused of scholastic dishonesty. "Scholastic dishonesty": includes, but is not limited to, cheating on a test, plagiarism, and collusion. For more information on HCC policy on academic honesty refer to the HCC Student Handbook.

Here's the link to the HCC information about academic integrity (Scholastic Dishonesty and Violation of Academic Scholastic Dishonesty and Grievance): http://www.hccs.edu/about-hcc/procedures/student-rights-policies--procedures/studentprocedures/

Attendance Procedures

Students are expected to attend class meetings on a regular basis and to participate in class and online activities. Students may be withdrawn administratively if they don't meet the State mandated attendance policy. You are responsible for materials covered during your absences. Class attendance is checked daily. Although it is your responsibility to drop a course for nonattendance, the instructor has the authority to drop you for excessive absences. As stated in the HCC Catalog, all students are expected to attend classes regularly. Students in DE courses must log into their Canvas class or they will be counted as absent. Just like an on-campus class, your regular participation is required. Although it is the responsibility of the student to withdraw officially from a course, the professor also has the authority to block a student from accessing Canvas, and/or to withdraw a student for excessive absences or failure to participate regularly. DE students who do not log into their Moodle class before the

Official Day of Record will be automatically dropped for nonattendance. Completing the DE online orientation does not count as attendance. For complete information regarding Houston Community College's policies on attendance, please refer to the HCC Student Handbook. **Last day to withdraw from this class is April 6, 2021.**

Student Conduct

Students shall not engage in disruptive activities while on the college campus or property. While it is impossible to compile a complete list of disruptive behavior, any form of conduct by an individual or group of students that interferes with or inhibits the educational opportunities of another student is considered a disruption. For more information regarding Student Conduct behavior, please review the Student Code of Conduct & Discipline Procedures.

HCC Policies

Here's the link to the HCC Student Handbook http://www.hccs.edu/resources-for/currentstudents/student-handbook/ In it you will find information about the following:

- Academic Information
- Academic Support
- Attendance, Repeating Courses, and Withdrawal
- Career Planning and Job Search
- Childcare
- disAbility Support Services
- Electronic Devices
- Equal Educational Opportunity
- Financial Aid TV (FATV)
- General Student Complaints
- Grade of FX
- Incomplete Grades
- International Student Services
- Health Awareness
- Libraries/Bookstore
- Police Services & Campus Safety
- Student Life at HCC
- Student Rights and Responsibilities
- Student Services
- Testing
- Transfer Planning
- Veteran Services

EGLS[3]

The EGLS[3] (Evaluation for Greater Learning Student Survey System) will be available for most courses near the end of the term until finals start. This brief survey will give invaluable information to your faculty about their teaching. Results are anonymous and will be available to faculty and division chairs after the end of the term. EGLS[3] surveys are only available for

the Fall, Spring and Summer semesters from: http://www.hccs.edu/resources-for/currentstudents/egls3-evaluate-your-professors/

Campus Carry Link

Here's the link to the HCC information about Campus Carry: http://www.hccs.edu/departments/police/campus-carry/

HCC Email Policy

When communicating via email, HCC requires students to communicate only through the HCC email system to protect your privacy. If you have not activated your HCC student email account, you can go to HCC Eagle ID and activate it now. You may also use Canvas Inbox to communicate.

Housing and Food Assistance for Students

Any student who faces challenges securing their foods or housing and believes this may affect their performance in the course is urged to contact the Dean of Students at their college for support. Furthermore, please notify the professor if you are comfortable in doing so.
This will enable HCC to provide any resources that HCC may possess.

Office of Institutional Equity

Use the link below to access the HCC Office of Institutional Equity, Inclusion, and Engagement (http://www.hccs.edu/departments/institutional-equity/)

disAbility Services

HCC strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including long and short term conditions, mental health, chronic or temporary medical conditions), please meet with a campus Abilities Counselor as soon as possible in order to establish reasonable accommodations. Reasonable accommodations are established through an interactive process between you, your instructor(s) and Ability Services. It is the policy and practice of HCC to create inclusive and accessible learning environments consistent with federal and state law. For more information, please go to http://www.hccs.edu/supportservices/disability-services/

Title IX

Houston Community College is committed to cultivating an environment free from inappropriate conduct of a sexual or gender-based nature including sex discrimination, sexual assault, sexual harassment, and sexual violence. Sex discrimination includes all forms of sexual and gender-based misconduct and violates an individual's fundamental rights and personal dignity. Title IX prohibits discrimination on the basis of sex-including pregnancy and parental status in educational programs and activities. If you require an accommodation due to pregnancy please contact an Abilities Services Counselor. The Director of EEO/Compliance

is designated as the Title IX Coordinator and Section 504 Coordinator. All inquiries concerning HCC policies, compliance with applicable laws, statutes, and regulations (such as Title VI, Title IX, and Section 504), and complaints may be directed to:

David Cross
Director EEO/Compliance
Office of Institutional Equity & Diversity
3100 Main
(713) 718-8271
Houston, TX 77266-7517 or Institutional.Equity@hccs.edu
http://www.hccs.edu/departments/institutional-equity/title-ix-know-your-rights/

Housing and Food Assistance for Students:

HCC Basic Needs: https://www.hccs.edu/support-services/counseling/hcc-cares/basic-needsresources/

Office of the Dean of Students

Contact the office of the Dean of Students to seek assistance in determining the correct complaint procedure to follow or to identify the appropriate academic dean or supervisor for informal resolution of complaints.

https://www.hccs.edu/about-hcc/procedures/student-rights-policies--procedures/studentcomplaints/speak-with-the-dean-of-students/

Department Chair Contact Information

Fidelis Ngang, fidelis.ngang@hccs.edu. 713-718-7513.