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| GrnCTClogoLGFIN2-1 | **VoIP II****Syllabus****Last revision date: 05/01/2009****Course Number:** |
| **COURSE DESCRIPTION:** The VoIP I course capitalized on hands-on small to medium office VoIP technology. This course, EECT-2375, will provide students with hands-on enterprise VoIP technology experience. The course will concentrate on planning, designing, and installing enterprise servers, switches, gateways, gatekeepers, and IP phones to support enterprise VoIP networks. Attention will be given to topics such as Quality of Service (QoS), security, and troubleshooting, documentation and teamwork. Lab required.  |
| **PREREQUISITES:** VoIP I, Cisco CVoice certification or instructor approval. |
| **RESOURCES:***Authorized Self-Study Guide Cisco IP Telephony (CIPT),2nd Edition ,* Jeremy Cioara CCIE No. 11727, Cisco Press, *2008 ISBN:* 978-1-58705-075-6*Authorized Self-Study Guide Cisco Voice over IP (CVOICE), 3rd Edition*, Kevin Wallace - CCIE No. 7945, 2008 ISBN: 978-1-58705-554-6<http://www.cbtnuggets.com/webapp/product?id=274> |
| **ADDITIONAL REFERENCES**:[*Voice, Video, and Data Network Convergence: Architecture and Design, from VoIP to Wireless*](http://www.bestwebbuys.com/Voice_Video_and_Data_Network_Convergence-ISBN_0122365429.html?isrc=b-search), Juanita Ellis, Joy Rahman, and Charles Pursell, Academic Press. 2003, ISBN# 0-122-365429*IP Telephony Demystified,* Ken Camp, McGraw-Hill Networking, 2003. (ISBN 9780071406703[*Carrier Grade Voice over IP*](http://books.google.com/books?id=PVIuN9Y5FGMC&dq=Carrier+Grade+Voice+over+IP&printsec=frontcover&source=bn&hl=en&ei=f9zPSfXXAoKEtwe-uczWCQ&sa=X&oi=book_result&resnum=4&ct=result#PPP1,M1)*, 2nd Edition*, Daniel Collins, McGraw-Hill Networking, 2003, ISBN 0-07-140634-4[*http://my.safaribooksonline.com/1587051923*](http://my.safaribooksonline.com/1587051923)*Cisco Voice Gateways and Gatekeepers*, Denise Donohue; David Mallory; Ken Salhoff, Cisco Press, 2006, ISBN 978-1-58705-258-3<http://www.informit.com/store/product.aspx?isbn=1587054078>[Troubleshooting Cisco IP Telephony (Networking Technology)](http://www.amazon.com/Troubleshooting-Cisco-Telephony-Networking-Technology/dp/1587050757/ref%3Dsi3_rdr_bb_product)[Paul Giralt](http://www.amazon.com/s/ref%3Dsi3_rdr_bb_author?index=books&field%2dauthor%2dexact=Paul%20Giralt), [Addis Hallmark](http://www.amazon.com/s/ref%3Dsi3_rdr_bb_author?index=books&field%2dauthor%2dexact=Addis%20Hallmark), [Anne Smith](http://www.amazon.com/s/ref%3Dsi3_rdr_bb_author?index=books&field%2dauthor%2dexact=Anne%20Smith), Cisco Press, 2003, ISBN 978-1-58705-075-6 <http://my.safaribooksonline.com/search> |

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| **WECM LEARNING OUTCOMES (Note WECM is Texas-specific – other states may want to include all outcomes as merely outcomes):**1. Describe the various installation techniques used for VoIP.
2. Identify architectures used in the enterprise environment.
3. Name the key VoIP industry protocols
4. Explain the application of technologies, architectures, and protocols used in the VoIP environment.
5. Describe Quality of Service (QoS) and its importance to phone services.

**ADDITIONAL LEARNING OUTCOMES RECOMMENDED:**1. Explain differences among various protocols: MGCP, Megaco, SIP, H323, RTP, RTCP, VoIP
2. Describe the principles of IP switching and routing.
3. Discuss the need and importance of IP phones.
4. Explain reasons for Hunt groups.
5. Explain how the Internet Protocol is key to VoIP.
6. Appraise the importance of quality of service with regard to availability, reliability, and serviceability of a voice network.
7. Design and create a presentation describing the UC installation steps

13. Describe the components involved in an enterprise VoIP network. |
| **COURSE ASSESSMENT:** Class lectures and PowerPoints will cover and expand upon the assigned reading material and hands-on labs. Regularly scheduled quizzes, tests, and exams will be administered by your instructor. Assignments, suggested schedules, and supplementary material to be distributed on the first day of class and posted to an online site provided by your instructor.

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| Chapter Quizzes/Exercises | 20% |  | **Grade Values:** |
| Exams/Chapter tests | 40% |  | **A=** | 90-100 |
| Lab exercises/Projects | 30% |  | **B=** | 80-89 |
| Class participation/Daily Work | 10%  |  | **C=** | 70-79 |
|  |  |  | **D=** | 60-69 |
| **Final Grade**  | **100%** |  | **F=** | 59-Below  |

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**COURSE SCHEDULE:** (Sequence of instruction recommended based on learning outcomes)

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| **Module** | **Major Topics** | **Learning Outcomes** | **Assignment** |
|  | Introduction to Cisco Unified Communications: Clustering, Installation and Updating | Describe the various installation techniques used for VoIP. Name the key VoIP industry protocols. Explain how the Internet Protocol is key to VoIP. (WECM #1, 3, 5, 10) | Reading assignment Module 1 |
|  | Module 1- LAB  |  | Objective quiz over module 1 |
|  | Configuring Cisco Catalyst Switches | Describe the principles of IP switching and routing.  ( Add’l Outcome #7 & 13)Identify architectures used in the enterprise environment. Design and create a presentation describing the steps to installing UC. (WECM #2 & 12) | Reading assignment Module 2 |
|  | Module 2 – LAB |  | Objective quiz over module 2 |
|  | Device Pool Setup  | Explain the application of technologies, architectures, and protocols used in the VoIP environment.  (WECM #4 and Add’l #10) | Reading assignment Module 3 |
|  | Module 3 – LAB |  | Objective quiz on 3 |
|  | Configuring Cisco Unified Communications (Callmanager) to support IP PhonesConfiguring Gateways and Trunking Configuring the Management Assistant Feature | Describe the various installation techniques used for VoIP (WECM #1)Explain the application of technologies, architectures, and protocols used in the VoIP environment. Describe the principles of switching and IP routing. Explain various protocols: MGCP, Megaco, SIP, H323, RTP, RTCP, VoIP.Name the key VoIP industry protocols .Explain various protocols: MGCP, Megaco, SIP, H323, RTP, RTCP, VoIPWECM #30) (Add’l Outcome #6) | Reading assignment Module 4 |
|  | Module 4 - LAB | Describe the components involved in an enterprise VoIP network. (WECM #4 ,6, 7, 13) | Mid-term comprehensive Exam |
|  | Setting up Call Restrictions and Control for multi-site OperationsConfiguring Attendant Console Feature | Identify architectures used in the enterprise environment. Describe Quality of Service (QoS) and its importance to phone services. (WECM #3 & 5) Explain the application of technologies, architectures, and protocols used in the VoIP environment. Describe the components involved in an enterprise VoIP network.(WECM # 4) (Add’l Outcome #13) | Reading assignment Module 5 |
|  | Module 5 – LAB |  | Quiz on module 5 |
|  | Route Plan Basics Advanced Routing Plans | Design and create a presentation describing the steps to installing UC.Partial Add’l Outcome #12) Describe the various installation techniques used for VoIP. Design and create a presentation describing the steps to installing UC.( WECM #1 & 4) (Partial Add’l Outcomes #12) | Reading assignment Module 6 |
|  | Module 6 - LAB |  | Objective quiz over module 6 |
|  | Configuring Hunt Groups | Explain reasons for Hunt groups. (Add’l Outcome #9) | Reading assignment Module 7 |
|  | Module 7 – LAB |  | Objective quiz over module 7 |
|  | Telephone Clients and Administrative Tools.Media ResourcesConfiguring Client Features | Explain how the Internet Protocol is key to VoIP.(WECM #9)Add’l Outcome #10) Design and create a presentation describing the steps to installing UC. Discuss the need and importance of IP phones. (Add’l Outcome # 8 & 12) | Reading assignment Module 8 |
|  | Module 8 - Lab |  | Comprehensive Final Exam |

**ACKNOWLEDGEMENTS**

**Syllabus developed by:** Peter Brierley, faculty member of Collin College, Eliazar Martinez, faculty member El Centro College. This syllabus was developed with support from National Science Foundation. Project leader was Ann Beheler, PI for the NSF ATE grant 0402356.

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