

## **Syllabus**

**Course Title: Systems Architecture**

**Course Number: CN 311**

### **Course Description:**

Presents design, management and administration of simple network topologies. Intro to Internet connectivity and protocols supporting networked applications over a distributed network and their relationship with end-users. Introduces the concepts of user content, applications, services, and infrastructure.

### **Prerequisite Courses:**

No Prerequisites.

### **Course Overview**

Key concepts covered in this course include:

- The theory and components of systems architecture
- The CASI and OSI Models
- Networking technology
- Operating systems
- Applications software
- Security

### **Course Outcomes:**

Upon completion of this course, learners should be able to:

- Explain the Content-Applications-Services-Infrastructure (CASI) Model relative to networks in an enterprise level organization.
- Discuss operating systems to the study of networking designs.
- Analyze communications, protocols and their integration in to computer networking.
- Compare the OSI model to another protocol that was designed based on the OSI model.
- Describe the benefits and functionality of a specific mobile application.
- Analyze tools and techniques used to monitor, maintain and secure a LAN.

- Investigate how to make the appropriate decision for WAN connection monitoring based on company requirements, functionality, bandwidth and cost.
- Analyze the direct connectivity users have along with the security measures needed to secure a network.
- Analyze the benefits of modern and future technologies, related to devices, networking, wireless and interconnectivity.
- Collaborate with a team to determine the network based hardware and software needed to support a networked environment.

## Course Materials:

### Required Texts:

Stalling, W., & Case, T. (2013). *Business Data Communications* (7th ed.). Upper Saddle River NJ: Pearson Prentice Hall. ISBN 0133023893, 9780133023893.

Stalling & Case textbook's companion website for case studies: [http://media.pearsoncmg.com/ph/esm/ecs\\_stallings\\_bdc\\_7/case\\_studies\\_index.html](http://media.pearsoncmg.com/ph/esm/ecs_stallings_bdc_7/case_studies_index.html).

American Psychological Association. (2010). *Publication Manual of the American Psychological Association* (6th ed.). Washington, DC: American Psychological Association. ISBN 1433805618, 978-1433805615. Companion website: <http://www.apastyle.org>.

### Required Resources:

Barnes, S. (2013). *The CASI Model*. [Video file]. Regis University. (provided)

CBS News. [CBS]. (2010, December 22). *What Net Neutrality Means For You*. [Video file]. Retrieved from <http://www.youtube.com/watch?v=hxz7PYIFvdl>

Corning Incorporated. [CorningIncorporated]. (2012, February 3). *A Day Made of Glass 2: Same Day. Expanded Corning Vision*. [Video file]. Retrieved from <http://www.youtube.com/watch?v=jZkHpNnXLB0>.

Corning Incorporated. [CorningIncorporated]. (2011, February 7). *A Day Made of Glass...Made Possible by Corning*. [Video file]. Retrieved from [http://www.youtube.com/watch?v=6Cf7IL\\_eZ38](http://www.youtube.com/watch?v=6Cf7IL_eZ38).

DNS Made Easy. [DNSMadeEasy]. *DNS Explained*. [Video file]. Retrieved from <http://www.youtube.com/watch?v=72snZctFFtA>

Droms, R. (1997). *Dynamic Host Configuration Protocol*. Internet Engineering Taskforce RFC 2131. <http://www.ietf.org/rfc/rfc2131.txt>

Donnell, C. (n.d.). Shannon's Theorem -- System Capacity in the Presence of Noise. Shannon's Theorem.ppsx (provided)

Donnell, C. (2013A). *Operating Systems: Variations and Usage*. [Audio file]. Regis University. (provided)

- Donnell, C. (2013B). *Building a Network*. [Audio file]. Regis University. (provided)
- Donnell, C. (2013C). *Wide Area Networks: Planning, Planning, Planning*. [Audio file]. Regis University. (provided)
- Donnell, C. (2013D). *Information Technology: Security and Management*. [Audio file]. Regis University. (provided)
- Donnell, C. (2013E). *Emerging Technologies and Security*. [Audio file]. Regis University. (provided)
- Etherton, E. [elithecomputerguy]. (2010, December 10). *The OSI Model Demystified*. [Video file]. Retrieved from <http://www.youtube.com/watch?v=HEEnLZV2wGI>
- Etherton, E. [elithecomputerguy]. (2011A, February 17). *Understanding Switches*. [Video file]. Retrieved from <http://www.youtube.com/watch?v=9yYqNqTNnqI>.
- Etherton, E. [elithecomputerguy]. (2011B, February 18). *Introduction to Networking*. [Video file]. Retrieved from <http://www.youtube.com/watch?v=rL8RSFQG8do>.
- Etherton, E. [elithecomputerguy]. (2011C, February 17). *The Introduction to Cloud Computing*. [Video file]. Retrieved from <http://www.youtube.com/watch?v=QYzJI0Zrc4M>
- Giachetti, R. E. (2004). *A framework to review the information integration of the enterprise*. International Journal of Production Research, 42(6), 1147-1166. DOI: 10.1080/00207540310001622430. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=11985436&site=ehost-live>.
- Giachetti, R. E. (2009). *Design for the Entire Business*. Industrial Engineer, 41(6), 39-43. Retrieved from <http://dml.regis.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=39775659&site=ehost-live&scope=site>.
- Matsuda, D. (2005). *Nyquist Theorem*. [PDF file]. Nyquist Theorem.pdf (provided).
- McCandless, D. [TEDEducation]. (2012, November 18). *The beauty of data visualization – David McCandless*. [Video file]. Retrieved from <http://ed.ted.com/lessons/david-mccandless-the-beauty-of-data-visualization>.
- Messer, J. [professormesser]. (2010A, July 17). *Packet Switched WAN Technologies – CompTIA Network+ N10-004: 2.5*. [Video file]. Retrieved from <http://www.youtube.com/watch?v=6lkbh5DLp8U>.
- Messer, J. [professormesser]. (2010B). *Common Networking Protocols – CompTIA Network+ N10-004: 1.1*. [Video file]. YouTube. Retrieved March 2, 2013, from <http://www.youtube.com/watch?v=QnilcNeh97c>.
- Messer, J. [professormesser]. (2011A, July 13). *Certificate Authorities – CompTIA Security+ SY0-301: 6.3*. [Video file]. Retrieved from <http://www.youtube.com/watch?v=od-qwtaAuJk>.

- Messer, J. [professormesser]. (2011B, July 19). *Network Intrusion Detection and Prevention – CompTIA Security+ SY0-301: 1.1*. [Video file]. Retrieved from <http://www.youtube.com/watch?v=antUjSrNbkw>.
- Messer, J. [professormesser]. (2012A, January 11). *An overview of IPv4 and IPv6 – CompTIA Network+ N10-005: 1.3*. [Video file]. Retrieved from <http://www.youtube.com/watch?v=qBb1EmQF38>.
- Messer, J. [professormesser]. (2012B, March 27). *T1/E1 and T3/E3/DS3 – CompTIA Network+ N10-005: 3.4*. [Video file]. Retrieved from <http://www.youtube.com/watch?v=JFq-P54xEZU>.
- Messer, J. [professormesser]. (2012C, March 27). *OCx, SONET, and SDH – CompTIA Network+ N10-005: 3.4*. [Video file]. Retrieved from <http://www.youtube.com/watch?v=zt095uuu1t8>.
- Messer, J. [professormesser]. (2012D, March 27). *Cellular, WiMAX, LTE, and HSPA+ – CompTIA Network+ N10-005: 3.4*. [Video file]. Retrieved from <http://www.youtube.com/watch?v=gXRCFJQxgAY>.
- Microsoft Corporation. [officevideos]. (2011, October 25). *Productivity Future Vision (2011)*. [Video file]. Retrieved from <http://www.microsoft.com/office/vision/>.
- Nokia. [buddesign]. (2008, February 25). *Nokia Morph Concept (long)*. [Video file]. Retrieved from <http://www.youtube.com/watch?v=IX-gTobCJHs>.
- Olshausen, B. (2000). *Aliasing. PSC129 – Sensory Processes*. Retrieved from <http://redwood.berkeley.edu/bruno/npb261/aliasing.pdf>.
- Sankar, Shyam. (2012, September). *Shyam Sankar: The rise of human-computer cooperation*. [Video file]. Retrieved from [http://www.ted.com/talks/shyam\\_sankar\\_the\\_rise\\_of\\_human\\_computer\\_cooperation.html](http://www.ted.com/talks/shyam_sankar_the_rise_of_human_computer_cooperation.html)
- TechEd. [HHHVideos]. (2008, June 4). *TechEd: Bill Gates on the future of application development*. [Video File]. Retrieved from <http://www.youtube.com/watch?v=tF3oWNYCHvo>
- Van Veen, B. [Barry Van Veen]. *Aliasing and the Sampling Theorem Simplified*. [Video file]. Retrieved from <http://www.youtube.com/watch?v=KuaannH5pnM>

### **Technology Tools:**

Minimum Technology Requirements: <http://www.regis.edu/CPS/CPS-Student-Portal/College-for-Professional-Studies/Academic-Resources/Online-Learning/System-Requirements.aspx>.

### **Pre-Assignment:**

**Online Format:** Sign on to D2L (Home Page) and become familiar with the course navigation of the Web Curriculum. Read Chapters 1-3 of text.

**Classroom-based Format:** Read Chapters 1-3 of text.

### Pre-Assignment Due Dates:

**Classroom-based Format:** This assignment is due the first night of class.

**Online Format:** This assignment is due the first night of class.

### Course Assignments and Activities:

	Topics	Readings	Activities Assignments and Associated Points
1	Introduction to Course CASI Model & Enterprise Architecture	Chapter 1-3 of Stallings text Barnes (2013) Giachetti (2004)	Post Introduction – required by Wednesday of Week 1 Discussions (25 pts) CASI Paper (50 pts)
2	Connecting Computers with Networks Common Network Protocols	Chapters 4-6 of Stallings text Olshausen, B. (2000)	Discussions (25 pts) Quiz 1 (100 pts)
3	Network Topology & Architectures OSI model vs. TCP/IP model	Chapters 7-9 of Stallings text CBS News (2010) Crawford & Marshall (2000) Droms (1997) Etherton (2010 & 2011C) Giachetti (2009)	Discussions (25 pts) Case Study 06 – Chevron’s Infrastructure Evolution (from Stallings companion website) (50 pts)
4	Network Operating Systems Mobile Applications	Chapters 10-11 of Stallings text Donnell (2013A) Messer (2012A) TechEd (2008)	Discussions (25 pts) Group System Technology Project – Part 1 (100 pts)
5	LAN Architectures	Chapters 12-14 of Stallings text Donnell (2013B) Etherton (2011A & 2011B)	Discussions (25 pts) Quiz 2 (100 pts)
6	WAN Architectures	Chapters 15-17 of Stallings text Donnell (2013C) Messer (2010A, 2012B, 2012C, & 2012D)	Discussions (25 pts) Case Study 10 Choice Hotels International (from Stallings companion website) (50 pts)
7	Network Management Network and Internet Security	Chapters 18-20 of Stallings text Donnell (2013D) Messer (2011A & 2011B)	Discussions (25 pts) Quiz 3 (100 pts)

8	Emerging Technologies	Donnell (2013E) Nokia (2008) Microsoft Corp (2011) Corning Inc. (2011 & 2012) Sankar (2012)	Discussions (25 pts) Group System Technology Project – Part 2 (250 pts)
			<b>Maximum Points Possible: 1000</b>

### CC&IS Grading Scale

Letter Grade	Percentage	Grade Point
A	93 to 100	4.00
A–	90 to less than 93	3.67
B+	87 to less than 90	3.33
B	83 to less than 87	3.00
B–	80 to less than 83	2.67
C+	77 to less than 80	2.33
C	73 to less than 77	2.00
C–	70 to less than 73	1.67
D+	67 to less than 70	1.33
D	63 to less than 67	1.00
D-	60 to less than 63	.67
F	Less than 60	0

Additional information about grading can be found in the latest edition of the University Catalog, available at <http://www.regis.edu/Academics/Course%20Catalog.aspx>.

### CC&IS Policies and Procedures

Each of the following CC&IS Policies & Procedures is incorporated here by reference. Students are expected to review this information each term, and agree to the policies and procedures as identified here and specified in the latest edition of the University Catalog, available at <http://www.regis.edu/Academics/Course%20Catalog.aspx> or at the link provided.

- The CC&IS Academic Integrity Policy.
- The Student Honor Code and Student Standards of Conduct.
- Incomplete Grade Policy, Pass / No Pass Grades, Grade Reports.
- The Information Privacy policy and FERPA. For more information regarding FERPA, visit the [U.S. Department of Education](http://www.ed.gov).
- The HIPAA policies for protected health information. The complete Regis University HIPAA Privacy & Security policy can be found here: <http://www.regis.edu/About-Regis-University/University-Offices-and-Services/Auxiliary-Business/HIPAA.aspx>.

- The Human Subjects Institutional Review Board (IRB) procedures. More information about the IRB and its processes can be found here: <http://regis.edu/Academics/Academic-Grants/Proposals/Regis-Information/IRB.aspx>.

The CC&IS Policies & Procedures Syllabus Addendum summarizes additional important policies including, Diversity, Equal Access, Disability Services, and Attendance & Participation that apply to every course offered by the College of Computer & Information Sciences at Regis University. A copy of the CC&IS Policies & Procedures Syllabus Addendum can be found here: <https://in2.regis.edu/sites/ccis/policies/Repository/CCIS%20Syllabus%20Addendum.docx>.