

## Course Competencies Template - Form 112

GENERAL INFORMATION			
Name: Dr. Diane King	Phone #: 7-7021		
Course Prefix/Number: CNT1512	Course Title: Introduction to Wireless Networking		
Number of Credits: 4			
Degree Type	<input type="checkbox"/> B.A. <input type="checkbox"/> B.S. <input type="checkbox"/> B.A.S <input type="checkbox"/> A.A. <input checked="" type="checkbox"/> A.S. <input type="checkbox"/> A.A.S. <input type="checkbox"/> C.C.C. <input type="checkbox"/> A.T.C. <input type="checkbox"/> V.C.C		
Date Submitted/Revised: October 15, 2003	Effective Year/Term: 2010-1		
<input type="checkbox"/> New Course Competency <input checked="" type="checkbox"/> Revised Course Competency			
Course to be designated as a General Education course (part of the 36 hours of A.A. Gen. Ed. coursework): <input type="checkbox"/> Yes <input type="checkbox"/> No			
The above course links to the following Learning Outcomes: <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> Communication  <input type="checkbox"/> Numbers / Data  <input checked="" type="checkbox"/> Critical thinking  <input type="checkbox"/> Information Literacy  <input type="checkbox"/> Cultural / Global Perspective             </td> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> Social Responsibility  <input type="checkbox"/> Ethical Issues  <input checked="" type="checkbox"/> Computer / Technology Usage  <input type="checkbox"/> Aesthetic / Creative Activities  <input type="checkbox"/> Environmental Responsibility             </td> </tr> </table>		<input type="checkbox"/> Communication <input type="checkbox"/> Numbers / Data <input checked="" type="checkbox"/> Critical thinking <input type="checkbox"/> Information Literacy <input type="checkbox"/> Cultural / Global Perspective	<input type="checkbox"/> Social Responsibility <input type="checkbox"/> Ethical Issues <input checked="" type="checkbox"/> Computer / Technology Usage <input type="checkbox"/> Aesthetic / Creative Activities <input type="checkbox"/> Environmental Responsibility
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Course Description (limit to 50 words or less, <u>must</u> correspond with course description on Form 102):  This course provides the student with a complete foundation of knowledge for entering into or advancing in the wireless networking industry. Topics include: an introduction to wireless LANs; RF theory; spread spectrum technologies; wireless LAN infrastructure devices; antennas and accessories; wireless LAN standards; and wireless LAN organizations to link budget math, troubleshooting, and performing a site survey. This course delivers hands-on training that benefits the novice as well as the experienced network professional. Prerequisites: CGS 1060 and CTS1134. Laboratory fee. (3hr. lecture; 2hr lab)			
Prerequisite(s): CGS1060; CTS1134	Corequisite(s):		

**Course Competencies:** (for further instruction/guidelines go to: <http://www.mdc.edu/asa/curriculum.asp>)

**Competency 1:** The student will demonstrate an understanding of the ability to identify the technology roles of wireless LAN applications by:

1. Describing the data access role.
2. Describing the extension of existing networks into remote locations.
3. Describing building-to-building connectivity.
4. Describing the "last mile data delivery" communication infrastructure.
5. Describing flexibility for mobile users.
6. Describing Small Office-Home Office (SOHO) use.
7. Describing wireless applications for mobile office, classroom, industry, and healthcare.

**Competency 2:** The student will demonstrate an understanding of the ability to identify the basic concepts of radio frequency behavior by:

1. Defining and applying the concept of 'gain' as it applies to radio frequency.
2. Defining and applying the concept of 'loss' as it applies to radio frequency.

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3. Defining and applying the concept of 'reflection' as it applies to radio frequency.
4. Defining and applying the concept of 'refraction' as it applies to radio frequency.
5. Defining and applying the concept of 'diffraction' as it applies to radio frequency.
6. Defining and applying the concept of 'scattering' as it applies to radio frequency.
7. Defining and applying the concept of 'Voltage Standing Wave Ratio (VSWR)' as it applies to radio frequency.
8. Defining and applying the concepts of 'amplification' and 'attenuation' as they apply to radio frequency.

Competency 3: The student will demonstrate an understanding of the ability to identify the basic concepts of radio frequency antennas by:

1. Defining and applying the concept of 'visual line of sight' as it applies to radio frequency antennas.
2. Defining and applying the concept of 'radio frequency line of sight' as it applies to radio frequency antennas.
3. Defining and applying the concept of 'the Fresnel Zone' as it applies to radio frequency antennas.
4. Defining and applying the concept of an 'intentional radiator' as it applies to radio frequency antennas.
5. Defining and applying the concept of 'Equivalent Isotropically Radiated Power (EIRP)' as it applies to radio frequency antennas.
6. Defining and applying the concept of 'Wave Propagation' as it applies to radio frequency antennas.

Competency 4: The student will demonstrate an understanding of the ability to discriminate between the uses for spread spectrum technologies by:

1. Identifying the differences between Wireless LANs, PANs, and Wans.
2. Explaining and discriminating between the functional spread spectrum technologies concepts of: co-location; channels; dwell time; throughput; and hop time.
3. Differentiating between and applying the spread spectrum technologies of Frequency Hopping Spread Spectrum (FHSS) and Direct Sequence Spread Spectrum (DSSS).

Competency 5: The student will demonstrate an understanding of the ability to identify the purposes of infrastructure devices by:

1. Explaining the installation, configuration, and management of access points.
2. Explaining the installation, configuration, and management of bridges.
3. Explaining the installation, configuration, and management of workgroup bridges.

Competency 6: The student will demonstrate an understanding of the ability to identify the purposes of client devices by:

1. Explaining the installation, configuration, and management of PCMCIA Cards.
2. Explaining the installation, configuration, and management of serial and ethernet converters.
3. Explaining the installation, configuration, and management of USB devices.
4. Explaining the installation, configuration, and management of PCI/ISA devices.

Competency 7: The student will demonstrate an understanding of the ability to identify the purposes of wireless LAN gateway devices by:

1. Explaining the installation, configuration, and management of residential gateways.
2. Explaining the installation, configuration, and management of enterprise gateways.

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Competency 8: The student will demonstrate an understanding of the ability to differentiate between radio frequency antennas by:

1. Explaining the basic attributes, purpose, and function of an omni-directional/dipole antenna.
2. Explaining the basic attributes, purpose, and function of a semi-directional antenna.
3. Explaining the basic attributes, purpose, and function of a highly-directional antenna.

Competency 9: The student will demonstrate an understanding of the ability to describe the proper locations and methods for installing radio frequency antennas.

Competency 10: The student will demonstrate an understanding of the ability to differentiate between wireless LAN accessories by:

1. Explaining the installation, configuration, and management of power over Ethernet devices.
2. Explaining the installation, configuration, and management of amplifiers.
3. Explaining the installation, configuration, and management of attenuators.
4. Explaining the installation, configuration, and management of lighting arrestors.
5. Explaining the installation, configuration, and management of RF connectors and cables.
6. Explaining the installation, configuration, and management of RF splitters.

Competency 11: The student will demonstrate an understanding of the ability to identify various wireless LAN standards by:

1. Discussing the advantages and disadvantages of implementing the following standards: 802.11, 802.11a, 802.11b, and 802.11g.
2. Applying the correct wireless standard to a pre-defined scenario.
3. Explaining the advantages and disadvantages of implementing the following standards: Bluetooth, Infrared, and HomeRF.

Competency 12: The student will demonstrate an understanding of the ability to identify various wireless LAN standards organizations by:

1. Discussing the direction and accountability of the Federal Communications Commission (FCC).
2. Discussing the direction and accountability of the Institute of Electrical and Electronics Engineers (IEEE).
3. Discussing the direction and accountability of the Wireless Ethernet Compatibility Alliance (WECA).
4. Discussing the direction and accountability of the European Telecommunications Standards Institute (ETSI).
5. Discussing the direction and accountability of the Wireless LAN Association (WLANA).
6. Discussing the direction and accountability of the Infrared Data Association (IrDA).

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