

**ITT Technical Institute**  
**MC2799T**  
**Mobile Communications Technology**  
**Capstone Project**  
**Onsite Course**

**SYLLABUS**

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**Credit hours:** 4.5

**Contact/Instructional hours:** 72 (36 Theory Hours, 36 Lab Hours)

**Prerequisite(s) and/or Corequisite(s):**

Prerequisites: Completion of a minimum of 75 credits earned in the program of study including ET1335T Introduction to Electronic Communications Systems or equivalent, MC2660T Mobile Wireless Communications II or equivalent, MC2665T Mobile Communication Devices or equivalent

**Course Description:**

Final capstone project provides the students with significant design experience and integration of knowledge in mobile communications technology gained in previous coursework, as well as a means to practice problem-solving and team work, project management, technical writing, and technical presentation skills.

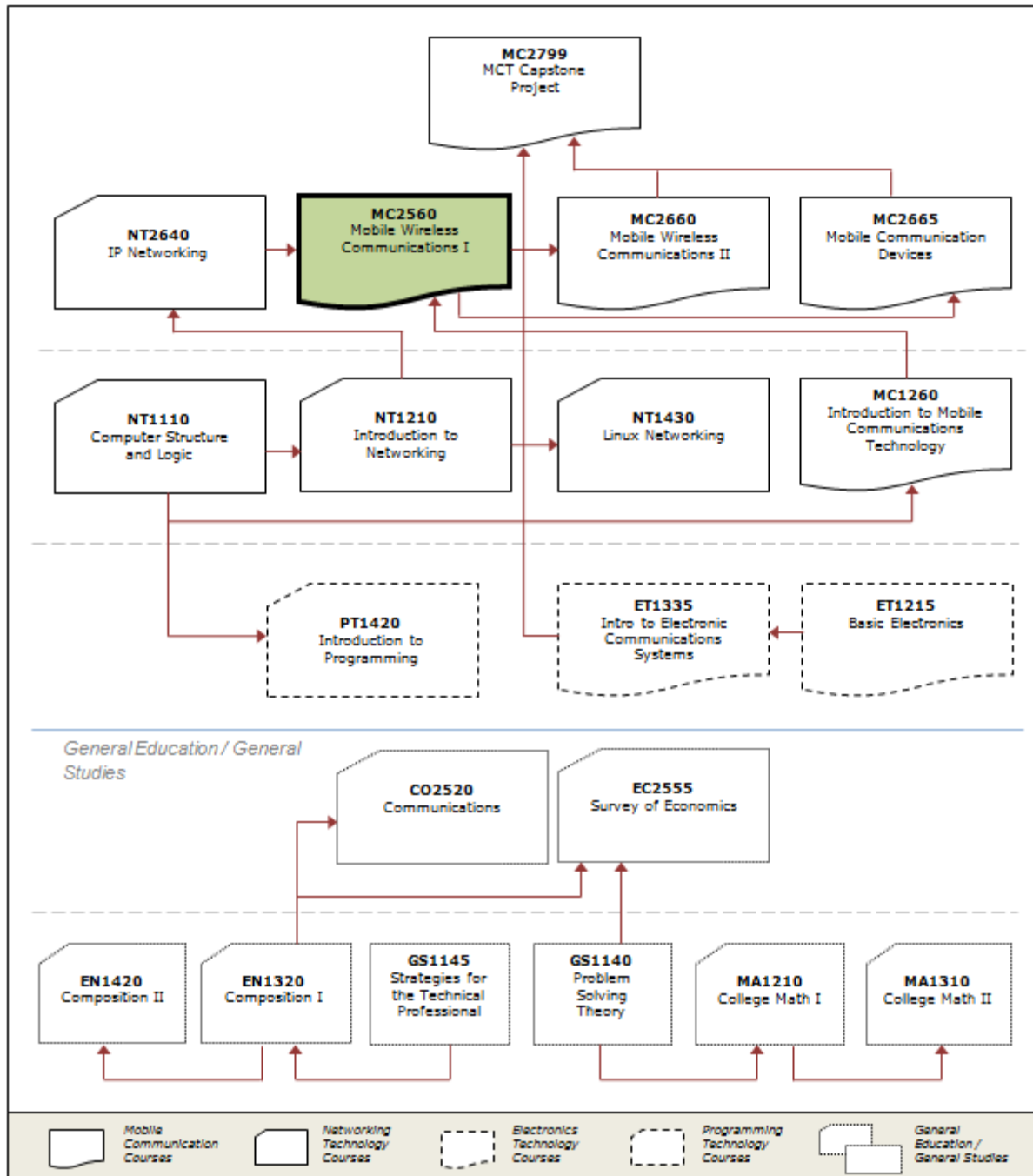
## Where Does This Course Belong?

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This course is required for the Mobile Communications Technology program, where it forms the final capstone project in the 7<sup>th</sup> quarter. The program covers the following core areas:

- Basic electronics
- Electronic communications systems
- Computers
- Networking
- Programming
- Mobile wireless communications
- Mobile communications devices

The following diagram demonstrates how this course fits in the program:



## Course Summary

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### Major Instructional Areas

1. Project management techniques
2. Fundamental review of the basics of mobile communications in the Associate of Applied Science in Mobile Communication Technology program
3. Capstone project
4. Research of current and emerging technology

### Course Objectives

1. Apply important concepts of project management to the actual capstone project proposed for this course.
2. Use Microsoft Office Project 2007 to plan and manage a capstone project.
3. Analyze the requirements for the capstone project using the seven steps of the systematic approach.
4. Integrate the knowledge acquired in the program to provide effective technological solutions for given problems.
5. Demonstrate the ability to use team oriented problem solving techniques on a large-scope project to arrive at an optimal solution.
6. Demonstrate the ability to document solutions to a problem by applying critical reading, analytical thinking and resolution skills.
7. Demonstrate the ability to present and defend a proposal in spoken and written formats.
8. Demonstrate the ability to complete a comprehensive skills assessment and fundamental review for the program of study.

## Learning Materials and References

### Required Resources

| Textbook Package   | New to this Course | Carried over from Previous Course(s) | Required for Subsequent Course(s) |
|--|--------------------|--------------------------------------|-----------------------------------|
| Wood, D. P., Pascarella, M. E., & Foley, D. R. (2012). <i>Essentials: Microsoft Office Project 2007, custom edition</i> . Indianapolis, IN: Pearson Custom Publishing. | ■                  |                                      |                                   |
| Rogers, G. S., & Edwards, J. (2011). <i>Introduction to wireless technology</i> . Custom edition. Prentice Hall PTR, Upper Saddle River, NJ.                           |                    | ■                                    |                                   |
| Cook, N. P. (2004). <i>Electronics: A complete course</i> (2 <sup>nd</sup> ed.). Upper Saddle River, NJ: Prentice Hall.  |                    | ■                                    |                                   |
| Beasley, J. S., & Miller, G. M. (2008). <i>Modern electronic communication</i> (9 <sup>th</sup> ed.). Upper Saddle River, NJ: Pearson Prentice Hall.                   |                    | ■                                    |                                   |
| Dooley, A. (2011). <i>Introduction to networking</i> (custom ed.). Indianapolis, IN: Pearson Custom Publishing.  |                    | ■                                    |                                   |
| Sobell, M. G. (2012). <i>A practical guide to Fedora and Red Hat Enterprise Linux</i> . (6 <sup>th</sup> ed.). Upper Saddle River, NJ: Prentice Hall.                  |                    | ■                                    |                                   |
| Odom, W. P. (2012). <i>IP networking</i> . Indianapolis, IN: Cisco Press.  |                    | ■                                    |                                   |
| MC2665: Mobile communications devices  |                    | ■                                    |                                   |
| Schiller, J. (2004). <i>Mobile communications</i> . (2 <sup>nd</sup> ed.). Boston, MA: Addison-Wesley.   |                    | ■                                    |                                   |
| Grayson, M., Shatzkamer, K., & Wierenga, K. (2011). <i>Building the mobile Internet</i> . Indianapolis, IN: Cisco Press.   |                    | ■                                    |                                   |
| Other Items  | New to this Course | Carried over from Previous Course(s) | Required for Subsequent Course(s) |
| Microsoft Project 2007   |                    | ■                                    |                                   |
| MCT Toolbox  |                    |                                      |                                   |

### Recommended Resources

#### Professional Associations

- Project Management Institute: <http://www.pmi.org/>

- The Project Management Institute (PMI) is a not-for-profit project management professional association.

ITT Tech Virtual Library (accessed via Student Portal)

#### Books

##### Ebrary

- Heerkens, G. (2001). *Project management*. New York: McGraw-Hill Trade.
- Heldman, K. (2003). *Project management jumpstart*. Alameda, CA: Sybex, Inc.
- Richman, L. L. (2002). *Project management step-by-step*. New York, NY: AMACOM.

##### eBooks on EbscoHost

- Heldman, K. (2004). *PMP: Project management professional study guide* (2nd ed.). San Francisco: Sybex Books.
- Horine, G. (2009). *Absolute beginner's guide to project management* (2<sup>nd</sup> ed.). Indianapolis, IN: Que Publishing.
- Lewis, J. P. (2007). *Fundamentals of project management. Worksmart series* (3rd ed.). New York: AMACOM Books.
- Westland, J. (2006). *The project management life cycle: A complete step-by-step methodology for initiating, planning, executing & closing a project successfully*. Philadelphia, PA: Kogan Page.

**NOTE:** All links are subject to change without prior notice.

## **Information Search**

Use the following keywords to search for additional online resources that may be used for supporting your work on the course assignments:

- Radio communications
- Cellular communications
- Frequency modulation
- Global System for Mobile Communications (GSM)
- Code Division Multiple Access (CDMA)

## Course Plan

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### Suggested Learning Approach

In this course, you will be studying individually and within a group of your peers. As you work on the course deliverables, you are encouraged to share ideas with your peers and instructor, work collaboratively on projects and team assignments, raise critical questions, and provide constructive feedback.

Use the following advice to receive maximum learning benefits from your participation in this course:

| DO   | DON'T   |
|--|---|
| <ul style="list-style-type: none"><li>▪ Do take a proactive learning approach.</li><li>▪ Do share your thoughts on critical issues and potential problem solutions.</li><li>▪ Do plan your course work in advance.</li><li>▪ Do explore a variety of learning resources in addition to the textbook.</li><li>▪ Do offer relevant examples from your experience.</li><li>▪ Do make an effort to understand different points of view.</li><li>▪ Do connect concepts explored in this course to real-life professional situations and your own experiences.</li></ul> | <ul style="list-style-type: none"><li>▪ Don't assume there is only one correct answer to a question.</li><li>▪ Don't be afraid to share your perspective on the issues analyzed in the course.</li><li>▪ Don't be negative about the points of view that are different from yours.</li><li>▪ Don't underestimate the impact of collaboration on your learning.</li><li>▪ Don't limit your course experience to reading the textbook.</li><li>▪ Don't postpone your work on the course deliverables – work on small assignment components every day.</li></ul> |

## Course Outline

**Note:** The books listed under Reading Assignment for each unit are references to material covered in previous classes that you should consult as necessary. While the listed reading may seem long, it is meant for a review of concepts, not required reading.

| <b>Unit 1: INTRODUCTION TO THE CAPSTONE PROJECT</b>   |                                  |   |   |
|---|----------------------------------|---|---|
| Upon completion of this unit, students are expected to:   |                                  |   | <b>Out-of-class work:</b><br>7 hours    |
| <ul style="list-style-type: none"> <li>Propose a Capstone project team.</li> <li>Create a project using Microsoft Project 2007 software.</li> <li>Complete a review of wireless technology theory.</li> </ul> |                                  |   |   |
| READING ASSIGNMENT  | GRADED ACTIVITIES / DELIVERABLES |   |   |
|   | Grading Category                 | Activity/Deliverable Title                                | Grade Allocation (% of all graded work) |
| <ul style="list-style-type: none"> <li>Wood, Pascarella, &amp; Foley, pp. 1-34</li> <li>Rogers &amp; Edwards, Chapters 1-6</li> </ul>   | Lab                              | Unit 1 Lab 1: Project 1 – Taking a Tour of Project 2007   | 3%                                      |
|   | Project                          | Unit 1 Project Part 1: Propose Capstone Project Team      | 2.5%                                    |
|   | Quiz                             | Mobile Communications Technology (MCT) Program Assessment | 1%                                      |

| <b>Unit 2: PLANNING THE PROJECT: PART 1</b>   |                                  |  |   |
|---|----------------------------------|--|---|
| Upon completion of this unit, students are expected to:   |                                  |  | <b>Out-of-class work:</b><br>7 hours    |
| <ul style="list-style-type: none"> <li>Formulate the final Capstone topic.</li> <li>Manage a project using Microsoft Project 2007 software.</li> <li>Complete a review of basic electronics theory.</li> <li>Complete a review of electronic communications.</li> </ul> |                                  |  |   |
| READING ASSIGNMENT  | GRADED ACTIVITIES / DELIVERABLES |  |   |
|   | Grading Category                 | Activity/Deliverable Title   | Grade Allocation (% of all graded work) |
| <ul style="list-style-type: none"> <li>Wood, Pascarella, &amp; Foley, pp. 35-52 and pp. 61-86</li> <li>Cook, Chapters 1-4, 6-8, 11-13, &amp; 15</li> </ul>  | Lab                              | Unit 2 Lab 1: Project 2 – Specifying Overall Project Settings            | 1.5%                                    |
|   |                                  | Unit 2 Lab 2: Project 3 – Entering Tasks and Creating a Project Schedule | 1.5%                                    |



|         |   |      |
|---------|---|------|
| Project | Unit 2 Project Part 2: Formulate Capstone Project Topic | 2.5% |
| Quiz    | Unit 2 Quiz 1   | 1%   |

|  |                                  |  |   |
|--|----------------------------------|--|---|
| <p><b>Unit 3: PLANNING THE PROJECT: PART 2</b></p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> <li>Plan Capstone project requirements</li> <li>Manage a project using Microsoft Project 2007 software</li> <li>Complete review of Electronic Communications</li> </ul> <p style="text-align: right;"><b>Out-of-class work:</b><br/>7 hours</p> |                                  |  |   |
| READING ASSIGNMENT   | GRADED ACTIVITIES / DELIVERABLES |  |   |
|  | Grading Category                 | Activity/Deliverable Title   | Grade Allocation (% of all graded work) |
| <ul style="list-style-type: none"> <li>Wood, Pascarella, &amp; Foley, pp. 99-133 and 171-203</li> <li>Beasley &amp; Miller, Chapters 1-3, 5, 6, 8-13, &amp; 18</li> </ul>  | Lab                              | Unit 3 Lab 1: Project 4 – Scheduling Resources and Assigning Costs | 2%                                      |
|  |                                  | Unit 3 Lab 2: Project 6 – Modifying Tasks Using the Gantt Chart    | 3%                                      |
|  | Project                          | Unit 3 Project Part 3: Planning Capstone Project Requirements      | 2.5%                                    |
|  | Quiz                             | Unit 3 Quiz 2  | 1%                                      |

|   |                                  |  |   |
|---|----------------------------------|--|---|
| <p><b>Unit 4: PROJECT PROTOTYPING: PART 1</b></p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> <li>Construct a Capstone project prototype – Part 1.</li> <li>Manage a project using Microsoft Project 2007 software.</li> <li>Complete a review of basic networking.</li> <li>Complete a review of electronic communications.</li> </ul> <p style="text-align: right;"><b>Out-of-class work:</b><br/>7 hours</p> |                                  |  |   |
| READING ASSIGNMENT  | GRADED ACTIVITIES / DELIVERABLES |  |   |
|   | Grading Category                 | Activity/Deliverable Title   | Grade Allocation (% of all graded work) |
| <ul style="list-style-type: none"> <li>Wood, Pascarella, &amp; Foley, pp. 135-160, 205-226 and 243-268.</li> <li>Dooley, Chapters 1-11</li> </ul>   | Lab                              | Unit 4 Lab 1: Project 5 – Modifying Task Information                     | 1.5%                                    |
|   |                                  | Unit 4 Lab 2: Project 7 – Customizing MS Project and Sharing Information | 1.25%                                   |
|   |                                  | Unit 4 Lab 3: Project 8 – Integrating Project Data                       | 1.25%                                   |
|   | Project                          | Unit 4 Project Part 4: Construct Capstone Project                        | 2.5%                                    |

|      |                    |    |
|------|--------------------|----|
|      | Prototype – Part 1 |    |
| Quiz | Unit 4 Quiz 3      | 1% |

|  |   |  |   |  |
|--|---|--|---|--|
| <p><b>Unit 5: PROJECT PROTOTYPING: PART 2</b></p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> <li>• Construct a Capstone project prototype – Part 2.</li> <li>• Manage a project using Microsoft Project 2007 software</li> <li>• Complete a review of basic networking.</li> <li>• Complete a review of the (Fedora) Linux operating system.</li> </ul> |   |  |   | <p><b>Out-of-class work:</b><br/>7 hours</p> |
| READING ASSIGNMENT   | <b>GRADED ACTIVITIES / DELIVERABLES</b> |  |   |  |
|  | <b>Grading Category</b>                 | <b>Activity/Deliverable Title</b>                                    | <b>Grade Allocation</b><br>(% of all graded work) |  |
| <ul style="list-style-type: none"> <li>• Sobell Chapters 1-3, 5-7, 9, 10-11, 13-14, 16-20, 21-23, 24-26</li> </ul>   | Assignment                              | Unit 5 Assignment 1: Project Plan                                    | 1.5%  |  |
|  | Project                                 | Unit 5 Project Part 5: Construct Capstone Project Prototype – Part 2 | 2.5%  |  |
|  | Quiz                                    | Unit 5 Quiz 4  | 1%  |  |

|   |   |  |   |  |
|---|---|--|---|--|
| <p><b>Unit 6: PROJECT PROTOTYPING: PART 3</b></p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> <li>• Construct Capstone project prototype – Part 3.</li> <li>• Manage a project using Microsoft Project 2007 software</li> <li>• Complete a review of basic networking.</li> <li>• Complete a review of the (Fedora) Linux operating system.</li> <li>• Complete a review of IP networking.</li> </ul> |   |  |   | <p><b>Out-of-class work:</b><br/>7 hours</p> |
| READING ASSIGNMENT  | <b>GRADED ACTIVITIES / DELIVERABLES</b> |  |   |  |
|   | <b>Grading Category</b>                 | <b>Activity/Deliverable Title</b>                                    | <b>Grade Allocation</b><br>(% of all graded work) |  |
| <ul style="list-style-type: none"> <li>• Odom, Chapters 1-29</li> </ul>   | Assignment                              | Unit 6 Assignment 1: Network Prototype                               | 1.5%  |  |
|   | Project                                 | Unit 6 Project Part 6: Construct Capstone Project Prototype – Part 3 | 2.5%  |  |
|   | Quiz                                    | Unit 6 Quiz 5  | 1%  |  |

|   |  |  |  |                                  |
|---|--|--|--|----------------------------------|
| <p><b>Unit 7: FINAL ASSEMBLY: PART 1</b></p> <p>Upon completion of this unit, students are expected to:</p> |  |  |  | <p><b>Out-of-class work:</b></p> |
|---|--|--|--|----------------------------------|

| <ul style="list-style-type: none"> <li>Construct the Final Capstone Project – Part 1.</li> <li>Manage a project using Microsoft Project 2007 software.</li> <li>Complete a review of mobile wireless communications.</li> <li>Complete a review of IP networking.</li> <li>Formulate written research documentation.</li> <li>Outline the final Capstone Project assembly process.</li> </ul> |                                  |  | <i>7 hours</i>                          |
|---|----------------------------------|--|---|
| READING ASSIGNMENT  | GRADED ACTIVITIES / DELIVERABLES |  |   |
|   | Grading Category                 | Activity/Deliverable Title                                 | Grade Allocation (% of all graded work) |
| <ul style="list-style-type: none"> <li>Schiller, Chapters 1-11</li> <li>Grayson, Shatzkamer, &amp; Wierenga, Chapters 1-8</li> </ul>  | Assignment                       | Unit 7 Assignment 1: Research Paper Outline                | 1.5%                                    |
|   | Project                          | Unit 7 Project Part 7: Construct Capstone Project – Part 1 | 2.5%                                    |
|   | Quiz                             | Unit 7 Quiz 6  | 1%                                      |

| <p><b>Unit 8: FINAL ASSEMBLY: PART 2</b></p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> <li>Construct a Final Capstone Project – Part 2.</li> <li>Manage a project using Microsoft Project 2007 software.</li> <li>Complete a review of mobile wireless communications.</li> <li>Formulate written research documentation.</li> <li>Outline the final Capstone Project assembly process.</li> </ul> |                                  |  | <p><b>Out-of-class work:</b><br/><i>7 hours</i></p> |
|--|----------------------------------|--|---|
| READING ASSIGNMENT   | GRADED ACTIVITIES / DELIVERABLES |  |   |
|  | Grading Category                 | Activity/Deliverable Title                                 | Grade Allocation (% of all graded work)             |
| <ul style="list-style-type: none"> <li>Schiller, Chapters 1-11</li> <li>Grayson, Shatzkamer, &amp; Wierenga, Chapters 1-8</li> </ul>   | Assignment                       | Unit 8 Assignment 1: Research Paper Draft                  | 1.5%  |
|  | Project                          | Unit 8 Project Part 8: Construct Capstone Project – Part 2 | 2.5%  |
|  | Quiz                             | Unit 8 Quiz 7  | 1%  |

|  |  |  |   |
|--|--|--|---|
| <p><b>Unit 9: FINAL ASSEMBLY: PART 3</b></p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> <li>Manage a project using Microsoft Project 2007 software.</li> <li>Complete a review of mobile wireless communications.</li> <li>Formulate written research documentation.</li> <li>Outline the final Capstone Project assembly process.</li> </ul> |  |  | <p><b>Out-of-class work:</b><br/><i>7 hours</i></p> |
|--|--|--|---|

| <ul style="list-style-type: none"> <li>Perform functional tests of the Capstone project.</li> </ul> |                                  |  |   |
|---|----------------------------------|--|---|
| READING ASSIGNMENT  | GRADED ACTIVITIES / DELIVERABLES |  |   |
|   | Grading Category                 | Activity/Deliverable Title   | Grade Allocation (% of all graded work) |
| <ul style="list-style-type: none"> <li>None</li> </ul>  | Assignment                       | Unit 9 Assignment 1: Research Paper Draft                          | 2%                                      |
|   | Project                          | Unit 9 Project Part 9: Perform Functional Test on Capstone Project | 2.5%                                    |
|   | Quiz                             | Unit 9 Quiz 8  | 1%                                      |

| <p><b>Unit 10: PRESENTATION REHEARSAL</b></p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> <li>Manage a project using Microsoft Project 2007 software.</li> <li>Complete a review of mobile wireless communications.</li> <li>Formulate written research documentation.</li> <li>Outline the final Capstone Project assembly process.</li> <li>Perform functional tests of the Capstone Project.</li> <li>Perform a final project check.</li> <li>Conduct a Capstone presentation rehearsal.</li> </ul> |                                  |   | <p><b>Out-of-class work:</b><br/>9 hours</p> |
|--|----------------------------------|---|--|
| READING ASSIGNMENT   | GRADED ACTIVITIES / DELIVERABLES |   |  |
|  | Grading Category                 | Activity/Deliverable Title  | Grade Allocation (% of all graded work)      |
| <ul style="list-style-type: none"> <li>Schiller, Chapters 1-11</li> <li>Grayson, Shatzkamer, &amp; Wierenga, Chapters 1-8</li> </ul>   | Assignment                       | Unit 10 Assignment 1: Research Documentation Review                   | 2%   |
|  | Project                          | Unit 10 Project Part 10: Rehearse Final Capstone Project Presentation | 2.5%   |
|  | Quiz                             | Unit 10 Quiz 9  | 1%   |

| <p><b>Unit 11: CAPSTONE PROJECT AND PRESENTATION</b></p> |                                  |                                     | <p><b>Out-of-class work:</b><br/>None</p> |
|--|----------------------------------|-------------------------------------|---|
| READING ASSIGNMENT                                       | GRADED ACTIVITIES / DELIVERABLES |                                     |   |
|  | Grading Category                 | Activity/Deliverable Title          | Grade Allocation (% of all graded work)   |
| <ul style="list-style-type: none"> <li>None</li> </ul>   | Presentation                     | Final Capstone Project Presentation | 15%                                       |
|  | Research Paper                   | Research Paper Submission           | 15%                                       |

|  |         |                        |     |
|--|---------|------------------------|-----|
|  | Project | Final Capstone Project | 10% |
|--|---------|------------------------|-----|

**NOTE:** Your instructor may add a few learning activities that will change the grade allocation for each assignment in a category. The overall category percentages will not change.

## Evaluation and Grading

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### Evaluation Criteria

The graded assignments will be evaluated using the following weighted categories:

| Category       | Weight      |
|----------------|-------------|
| Assignment     | 10%         |
| Lab            | 15%         |
| Project        | 35%         |
| Presentation   | 15%         |
| Research Paper | 15%         |
| Quiz           | 10%         |
| <b>TOTAL</b>   | <b>100%</b> |

### Grade Conversion

The final grades will be calculated from the percentages earned in the course, as follows:

| Grade | Percentage | Credit |
|-------|------------|--------|
| A     | 90–100%    | 4.0    |
| B+    | 85–89%     | 3.5    |
| B     | 80–84%     | 3.0    |
| C+    | 75–79%     | 2.5    |
| C     | 70–74%     | 2.0    |
| D+    | 65–69%     | 1.5    |
| D     | 60–64%     | 1.0    |
| F     | <60%       | 0.0    |

## Academic Integrity

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All students must comply with the policies that regulate all forms of academic dishonesty, or academic misconduct, including plagiarism, self-plagiarism, fabrication, deception, cheating, and sabotage. For

more information on the academic honesty policies, refer to the Student Handbook and the Course Catalog.

*(End of Syllabus)*