

ITT Technical Institute
HT201
Health Care Statistics
Onsite Course

SYLLABUS

Credit hours: 4

Contact/Instructional hours: 40 (40 Theory Hours)

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

Prerequisites: GE127 College Mathematics I or equivalent, HT102 Introduction to the Health Care Record or equivalent, HT105 Alternative Health Records or equivalent

Course Description:

This course is an introduction to basic descriptive statistics as well as quantitative measures commonly used to describe patient volume and quality of care in health care organizations such as census data, length of stay, bed occupancy rates, death rates, autopsy rates and infection rates. Emphasis is placed on creating effective graphic displays of statistical data.

Where Does This Course Belong?

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

This is a 5th quarter course in the Health Information Technology Associate degree program.

NOTE: *Refer to the catalog for the state-specific course and program information, if applicable.*

This course is required for the Health Information Technology Associate Degree program. This program covers the following core area:

- Health Statistics, Biomedical research and Quality management
- Healthcare data management
- Information technology and systems
- Health services organization and delivery
- Organizational resources

Course Summary

Major Instructional Areas

1. Descriptive statistics
2. Vital statistics
3. Healthcare statistics
4. Statistical applications with healthcare data
5. Interpretation and presentation of data
6. Knowledge-based research techniques

Course Objectives

1. Perform basic mathematical and statistical computations using health care data.
2. Distinguish between various types of health care statistical data.
3. Compute and interpret health care statistics
4. Construct graphs and charts to interpret graphical displays of statistical data
5. Demonstrate knowledge-based research techniques
6. Demonstrate the ability to use computers to process information
7. Demonstrate the ability to acquire and evaluate information
8. Describe the process of collecting and reporting complete and accurate statistical data
9. Apply ethical guidelines in the use of statistics

Detailed Topical Outline

Unit	Activities for the Unit
1—Introduction to Health Statistics & Mathematics Review	<ul style="list-style-type: none"> • Content Covered: <ul style="list-style-type: none"> ◦ <i>Calculating and Reporting Healthcare Statistics:</i> <ul style="list-style-type: none"> ◦ Chapter 1, "Introduction to Health Statistics," pp. 1-8 ◦ Chapter 2, "Mathematics Review," pp. 9-22 • Assignment: 1.1 • Chapter Test: 1.1-1.2
2—Patient Census Data	<ul style="list-style-type: none"> Read from <i>Calculating and Reporting Healthcare Statistics:</i> <ul style="list-style-type: none"> ◦ Chapter 3, "Patient Census Data," pp. 23-42 • Assignment: 2.1 • Chapter Test: 2.1
3—Percentage of Occupancy & Length of Stay	<ul style="list-style-type: none"> Read from <i>Calculating and Reporting Healthcare Statistics:</i> <ul style="list-style-type: none"> ◦ Chapter 4, "Percentage of Occupancy," pp. 43-56 ◦ Chapter 5, "Length of Stay," pp. 57-70 • Assignment: 3.1 • Chapter Test: 3.1-3.2
4—Mortality & Autopsy	Read from <i>Calculating and Reporting Healthcare Statistics:</i>

Unit	Activities for the Unit
Rates	<ul style="list-style-type: none"> ○ Chapter 6, "Death (Mortality) Rates," pp. 71-94 ○ Chapter 7, "Hospital Autopsies and Autopsy Rates," pp. 95-114. ● Assignment: 4.1 ● Chapter Test: 4.1-4.2 ● Exams: 4.1
5—Morbidity Rates & Other Miscellaneous Rates	<p>Read from <i>Calculating and Reporting Healthcare Statistics</i>:</p> <ul style="list-style-type: none"> ○ Chapter 8, "Morbidity and Other Miscellaneous Rates," pp. 115-136 ● Assignment: 5.1 ● Chapter Test: 5.1
6—HIM Department Statistics	<ul style="list-style-type: none"> ● Chapter 9, "Statistics Computed within the Health Information Management Department," pp. 137-170 ● Project: 6.1 ● Assignment: 6.1 ● Chapter Test 6.1 ● Exams: 6.1
7—Descriptive Statistics in Healthcare	<p>Read from <i>Calculating and Reporting Healthcare Statistics</i>:</p> <ul style="list-style-type: none"> ○ Chapter 10, "Descriptive Statistics in Healthcare," pp. 171-194 ● Assignment: 7.1 ● Chapter Test: 7.1
8—Presentation of Data	<p>Read from <i>Calculating and Reporting Healthcare Statistics</i>:</p> <ul style="list-style-type: none"> ○ Chapter 11, "Presentation of Data," pp. 195-226 ● Assignment: 8.1 ● Chapter Test: 8.1 ● Project: 8.1
9—Basic Research Principles	<p>Read from <i>Calculating and Reporting Healthcare Statistics</i>:</p> <ul style="list-style-type: none"> ○ Chapter 12, "Basic Research Principles," pp. 227-248 ● Assignment: 9.1 ● Chapter Test: 9.1
10—Inferential Statistics in Healthcare	<p>Read from <i>Calculating and Reporting Healthcare Statistics</i>:</p> <ul style="list-style-type: none"> ○ Chapter 13, "Inferential Statistics in Healthcare," pp. 249-258 ● Chapter Test: 10.1 ● Project: 10.1
11—Course Review, Project Presentation & Final Exam	<ul style="list-style-type: none"> ● Course Review ● Final Exam 11.1 ● Project 11.1

Learning Materials and References

Required Resources

Complete Textbook Package	New to this Course	Carried over from Previous Course(s)	Required for Subsequent Course(s)
Horton, L. A. (2012). <i>Calculating and Reporting Healthcare Statistics</i> (4 th ed.). Chicago: AHIMA.	✓		

Technology Requirements

Recommended Resources

Books and Professional Journals

- Journal of the American Statistical Association
- Journal of Business and Economic Statistics
- Journal of Agricultural, Biological, and Environmental Statistics
- Journal of Computational and Graphical Statistics
- Journal of Statistics Education

Professional Associations

- American Statistical Association – www.amstat.org
- Institute of Mathematical Statistics – www.imstat.org

ITT Tech Virtual Library (accessed via Student Portal | <https://studentportal.itt-tech.edu>)

Log on to the ITT Tech Virtual Library to access online books, journals, and other reference resources selected to support ITT Tech curricula.

Books

You may click “Books” or use the “Search” function on the home page to find the following books.

Ebrary

- Cook, Adrian, Gopalakrishnan Netuveli, and Aziz Sheikh. *Basic Skills in Statistics: A Guide for Healthcare Professionals*. Class Publishing, 2004.

- Melnick, Daniel, and Beatrice A. Rouse. *Portrait of Health in the United States: Major Statistical Trends and Guide to Resources 2001*. 1st ed. Berman Associates, 2001.
- Faltin, Frederick, Kenett, Ron, and Ruggeri, Fabrizio. Statistical Methods in Healthcare. Wiley, 2012.

Reference Resources

You may click “Reference Resources” or use the “Search” function on the home page to find the following reference resources.

- Health> State Health Facts Online

Program Links

You may click “Program Links” or use the “Search” function on the home page to find the following program links.

- School of Study>School of Health Sciences> Professional Organizations> American Health Information Management Association

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:

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- Mortality
- Census
- Hospital Autopsy Rates
- Descriptive Statistics
- Data Presentation
- Inferential Statistics
- Length of Stay

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

Course Outline

<p>Unit 1: Introduction</p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> • Define statistics • Appreciate the need to study healthcare statistics • Differentiate between descriptive and inferential statistics • Recognize where statistics in healthcare originate • Identify the users of healthcare statistics • Complete a Mathematics Review 			<p>Total outside work: 4 hours</p>
READING ASSIGNMENT	<ul style="list-style-type: none"> • Horton, L. Chapters 1-2 		
OUTSIDE WORK	Activity	Estimated Time	
	Complete the reading assignment	1 hr.	
	<i>Complete exercises and chapter tests from text book</i>	3 hrs.	
GRADED ACTIVITIES / DELIVERABLES	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
	Assignment	Unit 1 Assignment 1.1:	2.22%
	<i>Chapter Test</i>	Unit 1 Chapter Test 1.1	1.54%
	<i>Chapter Test</i>	Unit 1 Chapter Test 1.2	1.54%
<p>Unit 2: Patient Census Data</p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> • Define, differentiate, and apply the terms inpatient census, daily inpatient census, inpatient service day, total inpatient service days, and admission and discharge (A&D) • Differentiate between an interhospital (interfacility) transfer and an intrahospital transfer • Compute daily census and inpatient service days using the admission and discharge data provided • Compute census and inpatient service days with data given for births and transfers • Compute the average daily inpatient census for a patient care unit given inpatient service days for any such unit 			<p>Total outside work: 4 hours</p>

READING ASSIGNMENT	<ul style="list-style-type: none"> Horton, L, Chapter 3 		
OUTSIDE WORK	Activity		Estimated Time
	Complete the reading assignment		1 hr.
	<i>Complete exercises and chapter tests from text book</i>		3 hrs.
GRADED ACTIVITIES / DELIVERABLES	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
	Assignment	Unit 2 Assignment 2.1	2.22%
	Chapter Test	Unit 2 Chapter Test 2.1	1.54%

Unit 3: Percentage of Occupancy and Length of Stay

Upon completion of this unit, students are expected to:

Total outside work:
5 hours

- Define and differentiate among the terms inpatient bed count, bed complement, total bed count days, newborn bassinet count, bed count days, newborn bassinet count days
- Identify the beds that are included in a bed count
- Compute the bed occupancy percentage for any period given the data representing bed count and inpatient service days (adults and children)
- Compute the bassinet occupancy percentage for any period given bassinet count and newborn inpatient service days (newborn)
- Compute the percentage of occupancy for a period when there has been a change in the number of beds during that period
- Calculate the direct and indirect bed turnover rate
- Define the terms length of stay and discharge days
- Compute the length of stay for one patient based on data provided
- Calculate the total length of stay for a group of discharged patients
- Compute average length of stay
- Compute the average length of stay for newborns
- Describe a leave of absence day and identify when it is used in calculations

READING ASSIGNMENT	<ul style="list-style-type: none"> Horton, L, Chapters 4-5 		
OUTSIDE WORK	Activity		Estimated Time
	Complete the reading assignment		1.5 hrs
	<i>Complete exercises and chapter tests from text book</i>		1.5hrs
	<i>Study for Exam 1 which will be given in Unit 4</i>		2 hrs.

GRADED ACTIVITIES / DELIVERABLES	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
	Assignment	Unit 3 Assignment 3.1	2.22%
	Chapter Test	Unit 3 Chapter Test 3.1	1.54%
	Chapter Test	Unit 3 Chapter Test 3.2	1.54%

<p>Unit 4: Mortality & Autopsy Rates</p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> Define and calculate the following death rates: gross, net, postoperative, anesthesia, maternal, newborn, and fetal Calculate the case fatality rate Differentiate between operation and procedure Define cancer mortality and calculate its rate Define the terms autopsy, hospital inpatient autopsy, hospital autopsy, and autopsy rate Define and differentiate between a coroner and medical examiner Define a coroner's case and determine when it would be included in a hospital's autopsy rate Compute the following autopsy rates: gross, net, adjusted hospital, newborn, and fetal 			<p>Total outside work: 4 hours</p>
READING ASSIGNMENT	<ul style="list-style-type: none"> Horton, L, Chapter 6 & 7 		
OUTSIDE WORK	Activity	Estimated Time	
	Complete the reading assignments	2 hrs.	
	<i>Complete exercises and chapter tests from text book</i>	2 hrs.	
GRADED ACTIVITIES / DELIVERABLES	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
	Exam	Unit 4 Exam 4.1	5.0%
	Assignment	Unit 4 Assignment 4.1	2.22%
	Chapter Test	Unit 4 Chapter Test 4.1	1.54%
	Chapter Test	Unit 4 Chapter Test 4.2	1.54%

<p>Unit 5: Morbidity Rates</p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> Define nosocomial infection 		<p>Total outside work: 6 hours</p>
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<ul style="list-style-type: none"> • Discuss and calculate infection rate • Define and calculate the postoperative infection rate • Distinguish between a surgical procedure and a surgical operation • Define complication and calculate complication rate • When provided with appropriate data, compute the following rates: C-section, consultation, and other rates 			
READING ASSIGNMENT	<ul style="list-style-type: none"> • Horton, L, Chapters 8 		
OUTSIDE WORK	Activity		Estimated Time
	Complete the reading assignment		1.5 hrs
	<i>Complete exercises and chapter tests from text book</i>		2.5hrs
	<i>Study for Exam II which will be given in Unit 6</i>		2 hrs.
GRADED ACTIVITIES / DELIVERABLES	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
	Assignment	Unit 5 Assignment 5.1	2.22%
	Chapter Test	Unit 5 Chapter Test 5.1	1.54%

<p>Unit 6: HIM Department Statistics, Project Explanation Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> • Describe the uses of statistics computed within the HIM department in terms of unit cost, productivity, and staffing levels • Recognize how statistics are used in the creation of the health information department budget • Define budget and differentiate between the operational and capital budgets • Verify computerized statistical reports for accuracy • Recalculate statistics for greater specificity • Generate computerized statistical reports 			<p>Total outside work: 6 hours</p>
READING ASSIGNMENT	Horton, L. Chapter 9		
OUTSIDE WORK	Activity		Estimated Time
	Project Preparation		2 hrs.
	Complete reading assignment		2 hrs.
	<i>Exam II</i>		2 hrs.
GRADED ACTIVITIES / DELIVERABLES	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
	Exam	Unit 6 Exam 6.1	5.0%

Chapter Test	Unit 6 Chapter Test 6.1	1.54%
Assignment	Unit 6 Assignment 6.1	2.22%
Project	Unit 6 Project 6.1	5.0%

<p>Unit 7: Descriptive Statistics in Healthcare Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> • Define descriptive statistics • Define the terms rank, quartile, decile, and percentile • Explain how and why percentiles are used • Compute the percentile from an ungrouped distribution • Define and compute the mean, median, and mode • Define and differentiate among range, variance, and standard deviation • Calculate range, variance, and standard deviation • Define and computer correlation 			<p>Total outside work: 6 hours</p>
READING ASSIGNMENT	<ul style="list-style-type: none"> • Horton, L, Chapter 10 		
OUTSIDE WORK	Activity	Estimated Time	
	Complete the reading assignment	1.5 hrs.	
	<i>Complete exercises and chapter tests from text book</i>	2.5hrs	
	<i>Complete Part I of Project</i>	2 hrs.	
GRADED ACTIVITIES / DELIVERABLES	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
	Assignment	Unit 7 Assignment 7.1	2.22%
	Chapter Test	Unit 7 Chapter Test 7.1	1.54%

<p>Unit 8: Presentation of Data Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> • Discuss categorical data: nominal, ordinal, interval, and ratio • Differentiate between discrete data and continuous data • Describe and differentiate between tables and the following graphs: bar graphs, pie charts, line graphs, histograms, frequency polygons, pictograms, and scatter diagrams • Create tables and graphs to display statistical information • Understand the basic elements in preparing a report • Create tables and graphs to depict statistical information • Understand the basic elements in preparing a report 			<p>Total outside work: 4 hours</p>
READING ASSIGNMENT	<ul style="list-style-type: none"> • Horton, L, Chapter 11 		
OUTSIDE WORK	Activity	Estimated Time	
	Complete the reading assignment	1.5 hrs.	
	<i>Complete exercises and chapter tests from text book</i>	2.5hrs	
GRADED ACTIVITIES / DELIVERABLES	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
	Assignment	Unit 8 Assignment 8.1	2.22%
	Chapter Test	Unit 8 Chapter Test 8.1	1.54%
	Project	Unit 8 Project 8.1	6.5%

<p>Unit 9: Basic Research Principles Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> • Explain the different types of research • Describe the difference between quantitative and qualitative research • Differentiate among research designs: exploratory, historical, descriptive, causal, correlational, evaluation, and experimental • Describe the steps in the research process • Explain exploratory and conclusive research design methods • Describe the various data collection techniques • Differentiate among the following types of samples: probability and nonprobability; simple random, stratified, cluster, judgment, quota, and convenience • Define Institutional Review Board (IRB) and understand its role in research 			<p>Total outside work: 4 hours</p>
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<ul style="list-style-type: none"> Define hypothesis Define reliability and validity Differentiate between primary and secondary research Describe the Institutional Review Board in healthcare facilities conducting research Understand the various data interpretation issues and the importance of verification of data Apply ethical guidelines in the use of statistics 			
READING ASSIGNMENT	<ul style="list-style-type: none"> Horton, L, Chapter 12 		
OUTSIDE WORK	Activity		Estimated Time
	Complete the reading assignment		1.5 hrs.
	<i>Complete exercises and chapter tests from text book</i>		2.5hrs
GRADED ACTIVITIES / DELIVERABLES	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
	Assignment	Unit 9 Assignment 9.1	2.24%
	Chapter Test	Unit 9 Chapter Test 9.1	1.54%

<p>Unit 10: Inferential Statistics in Healthcare</p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> Define inferential statistics Interpret the standard error of the mean and confidence intervals Identify and describe the null hypothesis Understand the importance of <i>t tests</i> Interpret ANOVA Understand the significance of chi square 			<p>Total outside work: 6hours</p>
READING ASSIGNMENT	<ul style="list-style-type: none"> Horton, L, Chapter 13 		
OUTSIDE WORK	Activity		Estimated Time
	Complete the reading assignment		1.5 hrs.
	<i>Complete exercises and chapter tests from text book</i>		2.5hrs
	<i>Complete Project Part II</i>		2 hrs.
GRADED ACTIVITIES / DELIVERABLES	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
	Chapter Test	Unit 10 Chapter Test 10.1	1.54%

	Project	Unit 10 Project 10.1	8.5%
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<p>Unit 11: Course Review, Project Presentation and Final Exam Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> • Complete the presentation of their project • Participate in the course review • Complete the final exam 			<p>Total outside work: 4.5hours</p>
READING ASSIGNMENT	None		
OUTSIDE WORK	Activity		Estimated Time
	<i>Study for Final</i>		2.5hrs
	<i>Prepare Project Presentation</i>		2 hrs.
GRADED ACTIVITIES / DELIVERABLES	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
	Exam	Unit 11 Final Exam 11.1	15%
	Project	Unit 11 Project 11.1	15%

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

Evaluation Criteria

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

Category	Weight
Assignments	20%
Chapter Tests	20%
Exams	25%
Projects	35%
TOTAL	100%

Grade Conversion

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

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

NOTE: *Include any additional requirements and comments related to grading student assignments.*

Academic Integrity

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)