Science, Allied Health, Health, & Engineering Department

Course: **HIM*230 Healthcare Statistics and Data Analysis**

CRN:	**1290**	Semester:	**Spring 2018**
Location: Fully Online		Day/Time:	Online Only

Instructor: **Jill Flanigan**   Phone: 860-343-5791   E-mail: jflanigan@mxcc.edu

Schedule an appointment: https://jillflanigan.youcanbook.me

Office Hours [Wheaton Hall, Room 313]:

Monday 9:00 am - 10:30 am / Tuesday 9:00 am – 12:00 pm / Wednesday 3:00 pm - 4:30 pm

Course Description (from college catalog):

Gen Ed Competency: Quantitative Reasoning

Students will have hands-on practice calculating healthcare statistics and analyzing healthcare data to identify trends. Student will explore publicly available healthcare data. The course will include simulation lab practice using software to analyze data and create data visualizations. Students will learn methods for managing data quality and ensuring the accuracy and integrity of health data. Students will be introduced to the role of the HIM professional in implementing and improving information governance practices in healthcare organizations.

Course Prerequisites: MAT*168, HIM*201, HIM*113, HIM*157, HIM*205, and HIM*206 with a "C" or better in all prerequisite courses.

Importance of Course in Program/Discipline
American Health Information Management Association (AHIMA) Curriculum Competencies: The AHIMA Council for Excellence in Education developed competencies for associate degree students with the most recent update in the 2014 Curricula requirements. This program covers the AHIMA recommended competencies in six domains including (I) Data Content, Structure, and Standards, (II) Information Protection: Access, Disclosure, Archival, Privacy & Security, (III) Informatics, Analytics, and Data Use, (IV) Revenue Management, (V) Compliance, and (VI) Leadership. This course addresses the following AHIMA competencies (learning level this course/program goal):

Domain I: Data Content Structure and Standards
        Subdomain I.D. Data Management
                I.D.2 Apply graphical tools for data presentations
        Subdomain I.E. Secondary Data Sources
                I.E.1 Identify and use secondary data sources
                I.E.2 Validate the reliability and accuracy of secondary data sources
Domain III: Informatics, Analytics, and Data Use
        Subdomain III.A Informatics, Analytics, and Data Use
                III.A.1 Utilize software in the completion of HIM processes
        Subdomain III.B Information management Strategic Planning
                III.B.2   Utilize health information to support enterprise wide decision support for strategic
                planning
        Subdomain III.C Analytics and Decision Support
                III.C.1 Explain analytics and decision support
                III.C.2 Apply report generation technologies to facilitate decision-making
        Subdomain III.D Health Care Statistics
                III.D.1 Utilize basic descriptive, institutional, and healthcare statistics
                III.D.2 Analyze data to identify trends
        Subdomain III.E Research Methods
                III.E.1   Explain common research methodologies and why they are used in healthcare
        Subdomain III.H.1 Information Integrity and Data Quality

III.H.1   Apply policies and procedures to ensure the accuracy and integrity of health data both internal and external to the health system

Domain VI: Leadership

Subdomain VI.C Work Design and Process Improvement

VI.C.3   Utilize data for facility-wide outcomes reporting for quality management and performance improvement

Subdomain VI.F. Strategic and Organizational Management

VI.F.1   Summarize a collection methodology for data to guide strategic and organizational management

VI.F.4   Apply information and data strategies in support of information governance initiatives

VI.F.5   Utilize enterprise-wide information assets in support of organizational strategies and objectives

Subdomain VI.K Enterprise Information Management

VI.K.1   Apply knowledge of database architecture and design

Program/Discipline Learning Outcomes Contained in Course
Designated TAP Learning Outcomes (Competencies) of the Course

TAP Learning Outcomes (Competencies):

Quantitative Reasoning (D)

1. Represent mathematical and quantitative information symbolically, graphically, numerically, and verbally.

2. Apply quantitative methods to investigate routine and novel problems. This includes calculations/procedures, mathematical and/or statistical modeling, prediction, and evaluation.

3. Interpret mathematical and quantitative information and draw logical inferences from representations such as formulas, equations, graphs, tables, and schematics.

4. Evaluate the results obtained from quantitative methods for accuracy and/or reasonableness.

HIM Learning Outcomes (Competencies):
At the conclusion of this course, the Health Information Management Student will be able to:

- Apply graphical tools for data presentations
- Identify and use secondary data sources
- Validate the reliability and accuracy of secondary data sources
- Utilize software in the completion of HIM processes
- Utilize health information to support enterprise wide decision support for strategic planning
- Explain analytics and decision support
- Apply report generation technologies to facilitate decision-making
- Utilize basic descriptive, institutional, and healthcare statistics
- Analyze data to identify trends
- Explain common research methodologies and why they are used in healthcare
- Apply policies and procedures to ensure the accuracy and integrity of health data both internal and external to the health system
- Utilize data for facility-wide outcomes reporting for quality management and performance improvement
- Summarize a collection methodology for data to guide strategic and organizational management
- Apply information and data strategies in support of information governance initiatives
- Utilize enterprise-wide information assets in support of organizational strategies and objectives
- Apply knowledge of database architecture and design

Textbooks and other required readings/computer software/materials/library reserve:

Horton, Loretta (2016). Calculating and Reporting Healthcare Statistics, 5th Edition, Revised Reprint, Chicago: AHIMA Press. 9781584265955.

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AHIMA Virtual Lab

Methods of Instruction:

Learning will be achieved through use of online videos, library resources, web links, and through hands-on practice using analytical tools. Resources will be posted to the Blackboard Course space. Students may submit questions about course materials through online discussion boards, visit me during office hours, or schedule an appointent. It is important to read all the assigned material and view any video resources posted to the Blackboard Course.

Attention Mobile Users:

Some course content as presented in Blackboard Learn is not fully supported on mobile devices at this time. While mobile devices provide a convenient access to check in and read information about your courses, they should not be used to perform work such as taking tests, completing assignments or submitting substantive discussion posts.

Communication Plan:

These are my expectations for electronic communication:

- I will remove posts that I determine to be inappropriate or unprofessional.
- Post all questions regarding course readings, assignments, or assessments to the Discussion Board.
- Please use email (course messages) *ONLY* when the subject is of a personal and confidential matter. If the question you ask is of a nature that even one other person in the course could benefit from the answer, post the question in the appropriate discussion board forum.
- I check my email daily during normal business hours only. You can expect a reply from me via email within 24 hours during the workweek. You *may* get an email reply during the weekend or evening.
- Use APA Style for written submissions in this course www.apastyle.org.
- The writing style of discussion boards should be formal and business-appropriate, including citation of sources.

Technology and Social Media:

- Students should not mix personal and academic/professional contacts and accounts when using social media. Students should create social media accounts specifically for professional/academic use to separate their personal online persona from their professional/academic work.
- The college assigns and e-mail account to all students. I will communicate with students through course e-mail or through e-mail directly to the student's Middlesex Community College e-mail address.
- I will not accept requests to connect with students from my personal social media accounts. I have a LinkedIn account for professional use and I will accept requests to connect from students who have set up a professional LinkedIn account. I will delete that connection if the LinkedIn activity contains unprofessional content.

Attendance Policy:

Attendance in face-to-face courses and regular activity in online courses is essential to student success. If you have decided not to continue in a course, do not simply stop attending. You need to withdraw officially. Only students who withdraw from class will receive a grade of W. Otherwise, students will receive the grade they have earned.

Course Evaluation and Grading:

Assignments	890 points
Final Exam	110 points
Total	1000 points

The final grade will be evaluated as a percentage and will translate into letter grades as follows:

Letter Grade	Percent Grade
A	93.0-100.0
A-	90.0-92.9
B+	87.0-89.9
B	83.0-86.9
B-	80.0-82.9
C+	77.0-79.9
C	73.0-76.9
C-	70.0-72.9
D+	67.0-69.9
D	63.0-66.9
D-	60.0-62.9
F	Less than 60.0

Additional Syllabus Information and College Policies:

For information about the college's policies and procedures regarding academic honesty, accessibility/disability services, non-discrimination, attendance, audio-recording in the classroom, grade appeals, plagiarism, religious accommodations, weather/emergency closings, and more, please go to the following website: www.mxcc.edu/catalog/syllabus-policies/

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Course Schedule:
The following syllabus may be updated at the discretion of the instructor, please refer to Weekly Assignments and Announcements for any changes during the course.

Unit # & Dates	Topics	Outcomes/Learning Objectives	Reading & Assignments (with due dates)

Unit 1
 	
1/17 – 1/23
	Healthcare Statistics
	
	Data Sources
		• Identify the users of healthcare statistics.
		• Identify sources of healthcare data.
		• Compare and contrast between data and information, validity and reliability, descriptive and inferential statistics, primary and secondary data sources.
		• Validate the reliability of data sources.
			1. Read: Chapter 1
			2. Read: *Understanding Publicly Available Healthcare Data* (AHIMA Practice Brief, 2016)
			3. View: *Debunking third-world myths with the best stats you've ever seen.* (Rosling, 2007)
			4. Access Health Data Websites:
			   a. AHRQ (Agency for Healthcare Research and Quality (AHRQ), 2018)
			   b. CDC (Centers for Disease Control and Prevention (CDC), 2018)
			   c. CMS (Centers for Medicare & Medicaid Services (CMS), 2018)
			   d. Healthgrades (Healthgrades Operating Company, Inc., 2018)
			   e. Leapfrog (Leapfrog Group, 2018)
			   f. NCQA (National Committee for Quality Assurance, 2018)
			   g. PHPartners (Partners in Information Access for the Healthcare Workforce, 2018)
			   h. TJC (The Joint Commission, 2018)
			   i. WHO (World Health Organization (WHO), 2018)
			5. Assignment A-1 Chapter 1 Review
			6. Lab: L-1 Publicly Available Health Data (Websites: CDC, Vital Statistics, AHRQ, etc.)

Unit 2 1/24 – 1/30	Mathematics Review 1/24 – 1/30	• Differentiate and apply the following terms: fraction, quotient, decimal, ratio, proportion, rate, and percentage. • Compare and contrast the difference between a numerator and denominator. • Round whole numbers and decimals • Convert fractions and decimals to percentages. • Compute the average of a group of numbers.	1. Read: Chapter 2 2. Assignment: A-2 Chapter 2 Exercises and Review. 3. Lab: L-2 Excel Review

Unit # & Dates	Topics	Outcomes/Learning Objectives	Reading & Assignments (with due dates)
Unit 3 **1/31 – 2/6**	Healthcare Statistics: Patient Census	• Utilize basic descriptive, institutional, and healthcare statistics. • Utilize data for facility-wide outcomes reporting for quality management and performance improvement. • Explain, differentiate, and apply the following terms: inpatient admission, inpatient census, hospitalization, complete master census, daily inpatient census, inpatient service day, total inpatient service days, and admission and discharge on the same day (A&D), leave of absence and leave of absence day, recapitulation • Distinguish between an interhospital (interfacility) transfer and an intrahospital transfer • Compute daily census and inpatient service days using the admission and discharge data provided • Calculate census and inpatient service days with data given for newborns and transfers • Determine the average daily inpatient census for a patient care unit given inpatient service days for any such unit • Utilize software to complete spreadsheets	1. Read: Chapter 3 2. Assignment: A-3a Chapter 3 Exercises and Review 3. Lab: L-3 Excel Patient Census Exercise
Unit 4 **2/7 – 2/13**	Healthcare Statistics: Percentage of Occupancy	• Utilize basic descriptive, institutional, and healthcare statistics. • Utilize data for facility-wide outcomes reporting for quality management and performance improvement. • 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 for adults and children and the occupancy percentage for newborn • Differentiate and apply the direct and indirect bed turnover rate • Calculate the percentage of occupancy for a period when there has been a change in the number of beds during that period	1. Read: Chapter 4 2. Assignment: A-4 Chapter 4 Exercises and Review 3. Lab L-4 Excel Visualizing Data Trends

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Unit # & Dates	Topics	Outcomes/Learning Objectives	Reading & Assignments (with due dates)
Unit 5 2/14 – 2/20	Healthcare Statistics: Length of Stay	• Utilize basic descriptive, institutional, and healthcare statistics. • Utilize data for facility-wide outcomes reporting for quality management and performance improvement. • Explain, differentiate, and apply the following terms: length of stay (LOS), discharge days, and leave of absence day • Compute the length of stay for one patient, the average length of stay, and the average length of stay (ALOS) for newborns • Calculate the total length of stay for a group of discharged patients • Discover the relationship between length of stay and utilization management • Utilize software to complete spreadsheets	1. Read: Chapter 5 2. Assignment: A-5 Chapter 5 Exercises and Review 3. Lab: L-5 AHIMA VLab Tableau Introduction
Unit 6 2/21 – 2/27	Healthcare Statistics: Death (Mortality) Rates	• Utilize basic descriptive, institutional, and healthcare statistics. • Utilize data for facility-wide outcomes reporting for quality management and performance improvement. • Calculate the following death rates: hospital, gross, net, postoperative, anesthesia, postoperative, maternal, newborn, and fetal, cancer, crude and case fatality rate • Compare the differences in the four types of anesthesia used • Distinguish between a direct obstetrical death and indirect obstetrical death	1. Read: Chapter 6 2. Assignment: A-6 Chapter 6 Exercises and Review 3. Lab: L-6 AHIMA VLab Tableau DRG Exercise.
Unit 7 2/28 – 3/6	Healthcare Statistics: Hospital Autopsies and Autopsy Rates	• Utilize basic descriptive, institutional, and healthcare statistics. • Utilize data for facility-wide outcomes reporting for quality management and performance improvement. • Identify alternate terms for autopsy • Recognize a coroner's case and determine when it would be included in a hospital's autopsy rate • Calculate the following autopsy rates: gross, net, adjusted hospital, newborn, and fetal • Utilize software to complete spreadsheets	1. Read: Chapter 7 2. Assignment: A-7 Chapter 7 Exercises and Review 3. Lab L-7 AHIMA VLab Tableau Visualization Tools

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Unit # & Dates	Topics	Outcomes/Learning Objectives	Reading & Assignments (with due dates)
Unit 8 **3/7 – 3/20**	Healthcare Statistics: Morbidity and Other Miscellaneous Rates	• Utilize basic descriptive, institutional, and healthcare statistics. • Utilize data for facility-wide outcomes reporting for quality management and performance improvement. • Make calculations based on morbidity, infection, post-operative infection, complication, consultation, readmission • Explain the difference between a surgical operation and surgical procedure • Identify what constitutes a clean surgery case	1. Read: Chapter 8 2. Assignment: A-8 Chapter 8 Exercises and Review 3. Lab: AHIMA VLab Tableau Tobacco Use Exercise
Unit 9 **3/21 – 3/27**	Health Information Management Department Statistics	• Apply policies and procedures to ensure the accuracy and integrity of health data both internal and external to the health system. • Explain, differentiate, and apply the following terms: full-time equivalent employee, budget, case-mix, fiscal year, variance and variance analysis, payback period, return on investment • Determine the uses that statistics play in the health information management (HIM) department in terms of unit labor cost, productivity, staffing levels, budgets, and physician profiling • Differentiate between the operational and capital budgets • Verify computerized statistical reports and spreadsheets for accuracy • Calculate common statistics used in the management of an HIM department	1. Read: Chapter 9 2. Assignment: A-9 Chapter 9 Exercises and Review 3. Lab: L-9 AHIMA VLab Tableau Coding Productivity
Unit 10 **3/28 – 4/3**	Descriptive Statistics	• Explain analytics and decision support • Explain how and why percentiles are used • Compute the percentile from an ungrouped distribution • Differentiate among range, variance, and standard deviation • Calculate range, variance, standard deviation, and correlation	1. Read: Chapter 10 2. Assignment: A-10 Chapter 10 Exercises and Review 3. Lab: L-10 AHIMA VLab Tableau Mortality Rates

Unit # & Dates	Topics	Outcomes/Learning Objectives	Reading & Assignments (with due dates)
Unit 11 **4/4 – 4/10**	Data Visualization	• Explain analytics and decision support • Apply graphical tools for data presentations • Explain, differentiate, and apply the following terms: nominal, ordinal, interval, and ratio, and discrete and continuous data • Differentiate between tables and the following graphs: bar graphs, pie charts, line graphs, histograms, frequency polygons, pictograms, and scatter diagrams and choose the appropriate graph to use • Create tables and graphs to display statistical information • Prepare the basic elements of a report	1. Read: Chapter 11 2. Assignment: A-11 Chapter 11 Exercises and Review 3. Lab: L-11 AHIMA VLab Tableau Practice Patterns
Unit 12 **4/11 – 4/17**	Research Methods	• Explain common research methodologies and why they are used in healthcare. • Explain analytics and decision support • Compare and contrast the difference between quantitative and qualitative research • Differentiate among the types of research, research methods, samples, data collection techniques, and data interpretation issues • Determine the steps in the research process • Explain the role of the Institutional Review Board (IRB) in research in healthcare facilities • Apply ethical guidelines in the use of statistics	1. Read: Chapter 12 2. Assignment: A-12 Chapter 12 Exercises and Review 3. Lab: L-12 AHIMA VLab Tableau Acquiring Data from Online Resources and Data Mining and Analysis
Unit 13 **4/18 – 4/24**	Inferential Statistics	• Explain analytics and decision support • Explain inferential statistics • Compare and contrast descriptive and inferential statistics • Interpret the standard error of the mean and confidence intervals • Identify and describe the null hypothesis • Understand the importance of t tests and the chi-square • Interpret ANOVA	1. Read: Chapter 13 2. Assignment: A-13a Chapter 13 Exercises and Review 3. Lab: L-13 AHIMA VLab Tableau Public Data Project Part I
Unit 14 **4/25 – 5/1**	Data Analytics	• Apply knowledge of database architecture and design. • Explain analytics and decision support • Compare and contrast among the three type of data analytics • Determine how data analytics is used in making healthcare decisions	1. Read: Chapter 14 2. Assignment: A-14 Chapter 14 Exercises and Review 3. Lab: L-14 AHIMA Vlab Tableau Public Data Project Part II
Unit 15	**Review** **Final Exam**	**Review** **Complete final exam by 11/:59pm on 5/8/2018.**	

References

Agency for Healthcare Research and Quality (AHRQ). (2018). *Agency for Healthcare Research and Quality, Advancing Excellence in Healthcare*. Retrieved 1 8, 2018, from ahrq.gov: https://www.ahrq.gov/

AHIMA Practice Brief. (2016, June). *Understanding Publicly Available Healthcare Data*. Retrieved from AHIMA Body of Knowledge: http://bok.ahima.org/PB/PublicData#.WIONY6inFhE

Centers for Disease Control and Prevention (CDC). (2018). Retrieved 1 8, 2018, from Centers for Disease Control and Prevention: https://www.cdc.gov/

Centers for Medicare & Medicaid Services (CMS). (2018). Retrieved from Data. Medicare.gov: https://data.medicare.gov/

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Leapfrog Group. (2018). *The Hospital You Choose Matters*. Retrieved from Lleapfrog Group: http://www.leapfroggroup.org/

National Committee for Quality Assurance. (2018). *NCQA Measuring quality*. *Improving Healthcare*. Retrieved from NCQA.org: http://www.ncqa.org/

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Rosling, H. (2007, January 14). Debunking third-world myths with the best stats you've ever seen. *TEDTalks*. Retrieved from https://www.youtube.com/watch?v=RUwS1uAdUcl

The Joint Commission. (2018). Retrieved from The Joint Commission: https://www.jointcommission.org/

World Health Organization (WHO). (2018). Retrieved from World Health Organization: http://www.who.int/en/