

**University of Florida**  
**College of Public Health & Health Professions Syllabus**  
**HSA 6395: Healthcare Data Analytics I (3 credit hours)**  
 Semester: Fall 2018  
 Delivery Format: On-Campus  
 Course Website available in Canvas

Instructor Name: Nicole M. Marlow, PhD, MSPH  
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Teaching Assistant: Raj Desai, MS  
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 Office Hours: by appointment

Preferred Course Communications: Message in Canvas

Course meeting times and location:  
 Monday, Period 5, 11:45 – 12:35, HPNP 1101  
 Wednesday, Periods 5 – 6, 11:45 – 1:40, HPNP 1101

## PURPOSE AND OUTCOME

### Course Overview

This course is intended to provide an introduction to statistical analysis for Health Administration for MHA students. It is intended to acquaint (*or re-acquaint*) you with the basic concepts and procedures used in analyzing healthcare data. You will be introduced to the use of data analytics to facilitate decision-making tasks involved in the management of healthcare delivery processes. In addition, topics covered in this course will provide a foundation for the analytic approaches that are highlighted in HSA 6196 (Healthcare Data Analytics II), HSA 6198 (Information Management in Health Administration) and HSA 6385 (Performance Management for Health Care Managers).

### Course Objectives and/or Goals

This course is designed to instruct students on the following:

Course Objectives	Competencies Addressed
Describe the basic terminology and concepts of univariate, bivariate, and multivariate statistics.	Continually scan and interpret key trends and activities in the healthcare environment.
Utilize Microsoft Excel to aid in analysis, description, and presentation of statistical data and results.	Measure and improve clinical and organizational performance and as needed redesign organizational systems and processes.
Discuss appropriate ways to read, produce, present, and interpret data analytic reports.	Use statistical and analytical tools to measure and improve organizational performance.
Determine an appropriate technique for a given set of variables and questions.	Identify and effectively use appropriate communication vehicles based on audience characteristics and communication goals.
Explain the differences among various analytical techniques.	
Propose answers to strategic or operational questions using basic analytic techniques.	
Specify examples of how quantitative methods can be applied in health services.	

### Instructional Methods

- Lecture
- In-class analytics exercises, with additional work out of class, as necessary
- Student team run review sessions
- Student team presentations
- In-class discussions

**Disclaimer:** \*\*\*This syllabus represents my current plans and objectives. As we go through the semester, those plans may need to change to enhance the class learning opportunity. Such changes, communicated clearly, are not unusual and should be expected.\*\*\*

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## DESCRIPTION OF COURSE CONTENT

### Course Materials and Technology

#### Required Materials:

- *Statistics for Health Care Management and Administration: Working with Excel, 3<sup>rd</sup> Edition.* John F. Kros, & David A. Rosenthal; Jossey-Bass, 2016.
- *Healthcare Analytics for Quality and Performance Improvement.* Trevor L. Strome; John Wiley & Sons, Inc., 2013.
- Course reading distributed by instructor
- A computer with Excel capabilities (version 2010 or later)

For technical support for this class, please contact the UF Help Desk at:

- [Learning-support@ufl.edu](mailto:Learning-support@ufl.edu)
- (352) 392-HELP - select option 2
- <https://lss.at.ufl.edu/help.shtml>

### Topical Outline/Course Schedule (\*Red = Student Team Run Presentation)

Date	Topic	Reading	Assignment
Aug. 22nd	Welcome and introduction to the class		
Aug. 27th	Statistics and Excel	K&R Ch. 1	Exercises 1.4.4 (Due Sept. 2nd)
Aug. 29th	Excel as a Statistical Tool	K&R Ch. 2	Exercises 2.1.2, 2.2.2, 2.3.1, 2.3.3, 2.4.2, 2.5.2, 2.8.1, 2.8.2, 2.8.3 (Due Sept. 2nd)
Sept. 3rd	<b>LABOR DAY HOLIDAY</b>		
Sept. 5th	*Ch. 1 & 2 Exercises Review Primary: Team 1, Secondary: Team 8 Data Acquisition	K&R Ch. 3	Exercises 3.1.1, 3.1.2, 3.2.1a, 3.2.2a, 3.3.1, 3.3.2 (Due Sept. 9th)
Sept. 10th	*Ch. 3 Exercises Review Primary: Team 2, Secondary: Team 7 Data Display	K&R Ch. 4	
Sept. 12th	Data Display	K&R Ch. 4	Exercises 4.1.2, 4.1.5, 4.2.2, 4.3.2, 4.3.3 (Due Sept. 16th)
Sept. 17th	*Ch. 4 Exercises Review Primary: Team 3, Secondary: Team 6 Measures of Central Tendency and Dispersion	K&R Ch. 6	

Date	Topic	Reading	Assignment
Sept. 19th	Measures of Central Tendency and Dispersion	K&R Ch. 6	Exercises 6.1.2, 6.2.8, 6.3.1, 6.4.3, 6.5.2, 6.6.2, 6.6.4 (Due Sept. 23rd)
Sept. 24th	*Ch. 6 Exercises Review Primary: Team 4, Secondary: Team 5  Confidence Limits and Hypothesis Testing	K&R Ch. 7	
Sept. 26th	Confidence Limits and Hypothesis Testing	K&R Ch. 7	Exercises 7.1.2, 7.1.5, 7.1.6, 7.3.2, 7.4.4, 7.4.6, 7.5.2, 7.5.3 (Due Sept. 30th)
Oct. 1st	*Ch. 7 Exercises Review Primary: Team 5, Secondary: Team 4  Statistical Tests for Categorical Data	K&R Ch. 8	
Oct. 3rd	Statistical Tests for Categorical Data	K&R Ch. 8	Exercises 8.1.3, 8.2.5, 8.3.2 (Due Oct. 7th)
Oct. 8th	*Ch. 8 Exercises Review Primary: Team 6, Secondary: Team 3  T-Tests for Related and Unrelated Data	K&R Ch. 9	
Oct. 10th	T-Tests for Related and Unrelated Data	K&R Ch. 9	Exercises 9.1.1, 9.1.3, 9.2.1, 9.2.5, 9.3.3a (Due Oct. 14th)
Oct. 15th	*Ch. 9 Exercises Review Primary: Team 7, Secondary: Team 2  Analysis of Variance	K&R Ch. 10	
Oct. 17th	Analysis of Variance	K&R Ch. 10	Exercises 10.1.3a, 10.1.4a, 10.3.3-part 1 (Due Oct. 21st)
Oct. 22nd	*Ch. 10 Exercises Review Primary: Team 8, Secondary: Team 1  Linear Regression	K&R Ch. 11	
Oct. 24th	Linear Regression	K&R Ch. 11	Exercises 11.1.1a, 11.1.1b, 11.1.7, 11.3.2a (Due Oct. 23rd)
Oct. 29th	*Ch. 11 Exercises Review Primary: Team 1, Secondary: Team 8  Multiple Regression	K&R Ch. 12	
Oct. 31st	Multiple Regression	K&R Ch. 12	Exercises 12.1.1, 12.1.2 (Due Nov. 4th)
Nov. 5th	*Ch. 12 Exercises Review Primary: Team 2, Secondary: Team 7  Working session for team presentations on healthcare analytics	Strome Ch. 1 – 5, 7, 8, 10	
Nov. 7th	*Toward Healthcare Improvement Using Analytics Primary: Team 3, Secondary: Team 6	Strome Ch. 1	
<b>Nov. 12th</b>	<b>VETERAN'S DAY HOLIDAY</b>		
Nov. 14th	*Fundamentals of Healthcare Analytics Primary: Team 4, Secondary: Team 5	Strome Ch. 2	

Date	Topic	Reading	Assignment
Nov. 19th	*Developing an Analytics Strategy to Drive Change Primary: Team 5, Secondary: Team 4	Strome Ch. 3	
<b>Nov. 21st</b>	<b>THANKSGIVING HOLIDAY</b>		
Nov. 26th	*Defining Healthcare Quality and Value Primary: Team 6, Secondary: Team 3	Strome Ch. 4	
Nov. 28th	*Data Quality and Governance Primary: Team 7, Secondary: Team 2	Strome Ch. 5	
Dec. 3rd	*Developing and Using Effective Indicators Primary: Team 8, Secondary: Team 1	Strome Ch. 7	
Dec. 5th	*Leveraging Analytics in Quality Improvement Activities Primary: Team 1, Secondary: Team 8	Strome Ch. 8	
Dec. 6th	*Usability and Presentation of Information Primary: Team 2, Secondary: Team 7	Strome Ch. 10	
<b>Dec. 10th</b>	<b>FINAL EXAMS WEEK</b>		
<b>Dec. 12th</b>	<b>FINAL EXAMS WEEK</b>		

## ACADEMIC REQUIREMENTS AND GRADING

### Assignments

#### Textbook Assignments (50%)

Students will complete assignments from the relevant chapter of the Kros and Rosenthal textbook. Please refer to the course schedule above for assigned exercises for each chapter. Excel datasets to be used for the exercises will be posted to the Assignment link in Canvas. Your assignment submission will comprise an Excel file that includes a separate tab for each problem. All assignments will be submitted electronically to the Assignment link in Canvas by midnight on the date they are due.

#### Student Team Run Review Sessions (15%)

Students will be assigned teams to review the completed exercises for the relevant chapter of the Kros and Rosenthal textbook, including the solutions and steps in Excel for obtaining the solutions. Please refer to the course schedule above for your team's review sessions schedule. The primary team will be scheduled to present. The secondary team will be equally prepared to present the material and will do so in the event that the primary team is unavailable.

Please note, any student who has an unexcused absence on the date of his/her team's review session will receive 0% credit for the team's review session grade. Any student who has an excused absence on his/her team's review session date is eligible for up to 60% partial credit of the team's review session grade; however, this is conditional upon other team member feedback regarding acceptable contributions to the review session presentation materials and other necessary preparations prior to the excused absence. Further, up to 100% of the remaining 40% credit of the student's team review session grade will be available upon submission of a make-up assignment. Any student who has an excused absence and desires this make-up assignment will submit a paper encompassing a literature critique of a peer reviewed manuscript selected by the student and approved by the professor. Papers should be at least 5 pages in length, double-spaced, 12 point font, 1 inch margins. Additional specifics of the paper requirements will be made available on an as needed basis. Make-up assignments will be due by email submission to the professor and TA within two (2) weeks of the excused absence by 11:45 AM.

#### Student Team Presentations on Healthcare Analytics (30%)

Students will be assigned teams to present on applications of healthcare analytics in each class session during the latter half of the semester. Specifics of team presentation requirements will be reviewed in class and posted to the Assignment link in Canvas. See the course schedule outline for presentation topics and dates. Each team is also responsible for preparing and printing handouts for the class to supplement their

presentation. All presentation materials (i.e., presentation file and supplemental handout file) will be due by electronic submission to the Assignment link in Canvas by 11:45 AM on your team's presentation date.

Please note, any student who has an unexcused absence on the date of his/her team's presentation will receive 0% credit for the team's presentation grade. Any student who has an excused absence on his/her team presentation date is eligible for up to 60% partial credit of the team's presentation grade; however, this is conditional upon other team member feedback regarding acceptable contributions to the presentation materials and other necessary preparations prior to the excused absence. Further, up to 100% of the remaining 40% credit of the student's team review session grade will be available upon submission of a make-up assignment. Any student who has an excused absence and desires this make-up assignment will submit a paper encompassing a literature critique of a peer reviewed manuscript selected by the student and approved by the professor. Papers should be at least 5 pages in length, double-spaced, 12 point font, 1 inch margins. Additional specifics of the paper requirements will be made available on an as needed basis. Make-up assignments will be due by email submission to the professor and TA within two (2) weeks of the excused absence by 11:45 AM.

### **Class Attendance and Participation (5%)**

Attendance will be taken during each class session, and this will be reflected in each student's final grade.

Excused absences must be consistent with university policies in the Graduate Catalog

(<http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#attendance>) and require appropriate documentation. Additional information can be found here:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

For an absence to be considered excused based on these reasons, the TA or Course Instructor must be given notification prior to the start time of class via email or Canvas message. The time stamp of the email will be used to determine if notification was prior to the start of the class. Students who do not attend class without an approved excused absence will not receive any attendance and participation credit for that day.

Two (2) late arrivals to class will be considered the equivalent of one, unexcused class absence. Students will be allowed two (2) unexcused absences from class without affecting their attendance and participation grade.

Students are expected to read the assigned text prior to the class meeting date, complete all out of class assignments, be an active member of their group, and to actively participate in class discussions.

### **Grading**

<b>Requirement</b>	<b>% of final grade</b>
Textbook assignments	50%
Student Team Run Review Sessions	15%
Student Team Presentations on Healthcare Analytics	30%
Attendance and Participation	5%

The total number of points earned will be transformed to letter grades as follows. Please note that there will be no rounding up for grade increments:

<b>Points earned</b>	95 or more	90 - 94.99	87- 89.99	83 - 86.99	80 – 82.99	77 - 79.99	73 - 76.99	70 - 72.99	67 - 69.99	63 - 66.99	60 - 62.99	Below 60
<b>Letter Grade</b>	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E

The letter grade to grade point conversion table is listed below. Letter grade to grade point conversions are fixed by UF and cannot be changed.

<b>Letter Grade</b>	<b>A</b>	<b>A-</b>	<b>B+</b>	<b>B</b>	<b>B-</b>	<b>C+</b>	<b>C</b>	<b>C-</b>	<b>D+</b>	<b>D</b>	<b>D-</b>	<b>E</b>	<b>WF</b>	<b>I</b>	<b>NG</b>	<b>S-U</b>
<b>Grade Points</b>	4.0	3.67	3.33	3.0	2.67	2.33	2.0	1.67	1.33	1.0	0.67	0.0	0.0	0.0	0.0	0.0

For greater detail on the meaning of letter grades and university policies related to them, see the Registrar's Grade Policy regulations at:  
<http://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

### **Policy Related to Late and Make up Work**

Students are expected to complete all assignments by the appropriate date/time. Students are allowed to make-up work ONLY as the result of illness or other unanticipated circumstances warranting a medical excuse and resulting in the student missing a deadline, consistent with College policy. Late assignments not resulting from one of these circumstances and not pre-arranged and approved by the student's professor will not be accepted and will not receive credit for the assignment. The professor reserves the right to determine appropriate make-up options for each student.

Please note: Any requests for make-ups due to technical issues MUST be accompanied by the ticket number received from LSS when the problem was reported to them. The ticket number will document the time and date of the problem. You MUST e-mail me within 24 hours of the technical difficulty if you wish to request a make-up.

### **Policy Related to Required Class Attendance and Participation**

Students are expected to read the assigned text prior to the class meeting date, complete all out of class assignments, be an active member of their group, and to actively participate in class discussions.

Excused absences must be consistent with university policies in the Graduate Catalog (<http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#attendance>) and require appropriate documentation. Additional information can be found here:  
<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

For an absence to be considered excused based on these reasons, the TA or Course Instructor must be given notification prior to the start time of class via email or Canvas message. The time stamp of the email will be used to determine if notification was prior to the start of the class. Students who do not attend class without an approved excused absence will not receive any attendance and participation credit for that day.

Two (2) late arrivals to class will be considered the equivalent of one, unexcused class absence. Students will be allowed two (2) unexcused absences from class without affecting their attendance and participation grade.

### **Policy Related to Guests Attending Class:**

Only registered students are permitted to attend class. However, we recognize that students who are caretakers may face occasional unexpected challenges creating attendance barriers. Therefore, by exception, a department chair or his or her designee (e.g., instructors) may grant a student permission to bring a guest(s) for a total of two class sessions per semester. This is two sessions total across all courses. No further extensions will be granted. Please note that guests are **not** permitted to attend either cadaver or wet labs. Students are responsible for course material regardless of attendance. For additional information, please review the Classroom Guests of Students policy in its entirety. Link to full policy:  
<http://facstaff.phhp.ufl.edu/services/resourceguide/getstarted.htm>

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## **STUDENT EXPECTATIONS, ROLES, AND OPPORTUNITIES FOR INPUT**

### **Expectations Regarding Course Behavior**

Students are expected to:

- Attend all classes
- Arrive on time and stay until class is dismissed
- Complete reading and homework assignments prior to class
- Participate in class discussions
- Be an active member of your group
- Exhibit professional behavior
- Limit use of electronic devices strictly to activities in support of the learning environment.

### **Communication Guidelines**

Students will be expected to communicate via the Canvas messaging system.

### **Academic Integrity**

Students are expected to act in accordance with the University of Florida policy on academic integrity. As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge:

**“We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.”**

You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied:

**“On my honor, I have neither given nor received unauthorized aid in doing this assignment.”**

It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For additional information regarding Academic Integrity, please see Student Conduct and Honor Code or the Graduate Student Website for additional details:

<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>  
<http://gradschool.ufl.edu/students/introduction.html>

Please remember cheating, lying, misrepresentation, or plagiarism in any form is unacceptable and inexcusable behavior.

### **Online Faculty Course Evaluation Process**

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

## **SUPPORT SERVICES**

### **Accommodations for Students with Disabilities**

If you require classroom accommodation because of a disability, you must register with the Dean of Students Office <http://www.dso.ufl.edu> within the first week of class. The Dean of Students Office will provide documentation of accommodations to you, which you then give to me as the instructor of the course to receive accommodations. Please make sure you provide this letter to me by the end of the second week of the course. The College is committed to providing reasonable accommodations to assist students in their coursework.

### **Counseling and Student Health**

Students sometimes experience stress from academic expectations and/or personal and interpersonal issues that may interfere with their academic performance. If you find yourself facing issues that have the potential to or are already negatively affecting your coursework, you are encouraged to talk with an instructor and/or seek help through University resources available to you.

- The Counseling and Wellness Center 352-392-1575 offers a variety of support services such as psychological assessment and intervention and assistance for math and test anxiety. Visit their web site for more information: <http://www.counseling.ufl.edu>. On line and in person assistance is available.
- You Matter We Care website: <http://www.umatter.ufl.edu/>. If you are feeling overwhelmed or stressed, you can reach out for help through the You Matter We Care website, which is staffed by Dean of Students and Counseling Center personnel.
- The Student Health Care Center at Shands is a satellite clinic of the main Student Health Care Center located on Fletcher Drive on campus. Student Health at Shands offers a variety of clinical services.

The clinic is located on the second floor of the Dental Tower in the Health Science Center. For more information, contact the clinic at 392-0627 or check out the web site at: <https://shcc.ufl.edu/>

- Crisis intervention is always available 24/7 from:

Alachua County Crisis Center  
(352) 264-6789

<http://www.alachuacounty.us/DEPTS/CSS/CRISISCENTER/Pages/CrisisCenter.aspx>

Do not wait until you reach a crisis to come in and talk with us. We have helped many students through stressful situations impacting their academic performance. You are not alone so do not be afraid to ask for assistance.

### **Inclusive Learning Environment**

Public health and health professions are based on the belief in human dignity and on respect for the individual. As we share our personal beliefs inside or outside of the classroom, it is always with the understanding that we value and respect diversity of background, experience, and opinion, where every individual feels valued. We believe in, and promote, openness and tolerance of differences in ethnicity and culture, and we respect differing personal, spiritual, religious and political values. We further believe that celebrating such diversity enriches the quality of the educational experiences we provide our students and enhances our own personal and professional relationships. We embrace The University of Florida's Non-Discrimination Policy, which reads, "The University shall actively promote equal opportunity policies and practices conforming to laws against discrimination. The University is committed to non-discrimination with respect to race, creed, color, religion, age, disability, sex, sexual orientation, gender identity and expression, marital status, national origin, political opinions or affiliations, genetic information and veteran status as protected under the Vietnam Era Veterans' Readjustment Assistance Act." If you have questions or concerns about your rights and responsibilities for inclusive learning environment, please see your instructor or refer to the Office of Multicultural & Diversity Affairs website: [www.multicultural.ufl.edu](http://www.multicultural.ufl.edu)