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Health Services Administration Syllabi Fall 2020

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HESA 355 Biostatistics

Stephanie Donauer
donauers1@xavier.edu

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HESA 355: Biostatistics

Fall 2020

Department of Health Services Administration
College of Professional Sciences
Xavier University

Schedule: MWF (11:00-11:50pm)
Classroom: Conaton Learning Commons Room 207
Credit Hours: Three Undergraduate Credits
Prerequisites: HESA 101; HESA 110
Faculty: Stephanie Donauer
Office: 409 Schott Hall
Office Hours: Tuesdays/Thursdays 2:15 – 3:30; virtual only – see Canvas for Zoom link)
Office Phone: (513)745-4396
E-mail: donauers1@xavier.edu

Program Director: Dr. Jennifer Chubinski, Schott 411 chubinskij@xavier.edu
Program Administrator: Ms. Judy Janzen M.Ed., Schott 404, janzen@xavier.edu
Xavier Writing Center: Conaton Learning Center

Course Description (from the Xavier University Catalog): An introduction to the importance of biostatistics in guiding health care decision makers.

HSA Department Mission Statement (2011):

In keeping with its Catholic, Jesuit tradition, the mission of the Department of Health Services Administration at Xavier University is to educate knowledgeable, highly skilled, values-oriented future leaders who will contribute to the health of society by continuously improving the management of health related organizations. HSA will accomplish its mission through:

- Challenging students in the classroom and in applied field experiences including internships and administrative residencies
- Developing internal and external collaborative relationships with academicians and with health care practitioners which lead to innovations in teaching as well as in the delivery of health services
- Incorporating research, scholarship, and collaborative projects into the classroom experiences and field work.

Objectives, SLO's, Competency Level, and Assessment			
Course Objectives	Student Learning Outcome	Minimum expected level of competence	Method of assessment
Identify the general principles and explain the role and importance of biostatistical analysis in	Be able to use quantitative and qualitative skills to analyze business and health data	2- Competent Able to analyze business and health data, and can make some basic interpretations of the results.	Quizzes; Exam

medical, public health, and biological research	(BSHSA SLO 1)		
Distinguish between internal and external validity and recognize their roles and significance in attributing research findings	Be able to describe population health and health care assessment of diverse populations (BSHSA SLO 7)	1- Basic States and explains specific examples of determinants and measures of risk in special populations and their healthcare needs.	Exam; Presentation
Select appropriate outcome variables to address important public health problems	Be able to discuss how health informatics supports health in its operations, revenue, quality, or patient care (BSHSA SLO 8)	1-Basic States and explains specific examples of health informatics technology use to support health care operations, revenue, or patient-centered quality outcomes	Quizzes; Exam; Presentation
Interpret and discuss the general statistical principles applied in a research analysis	Be able to present information using appropriate oral presentation skills (BSHSA SLO 11)	1-Basic Oral presentation skills get across information, but quality of oral presentation skills is minimal (i.e. impacted strongly by nerves, lack of eye contact, cannot be heard, etc.	Exam; Presentation

Required Readings: Sullivan L. (2018). *Essentials of Biostatistics in Public Health, Third Edition*. Burlington, MA: Jones & Bartlett Learning. (ISBN 978-1-284-10819-4)

GPA Requirement for Health Services Administration Majors:

Students must maintain an overall combined major/concentration GPA of 2.67. This GPA is made up of all courses taken in the major and concentration, and equates to a B- average for all major courses. If the student is to change concentrations, grades from their first concentration still apply to the calculation of this GPA. See the program website for a full description of the policy.

Inclusivity Statement:

The Department of Health Services Administration and its faculty and staff are committed to providing an atmosphere for learning that respects diversity, in which all students feel comfortable and safe to learn, and in which all students feel like valued members of the HSA community. We are committed to addressing issues that put such an atmosphere in jeopardy, and to being active allies to diverse students. In order to build a positive classroom community, we ask that students:

- Appreciate the opportunity that we have to learn from each other in this community;
- Share their unique experiences, values and beliefs;
- Be open to the views of others;
- Honor the uniqueness of their peers;
- Communicate in a respectful manner;
- Keep confidential discussions that the community has of a personal (or professional) nature;
- Utilize this opportunity together to discuss ways in which we can create an inclusive environment in this course and across the Xavier community.

Attendance Policy: Reasonable attendance at all class meetings is expected. If a student is unable to attend a class, **the responsibility of missed class content is the sole responsibility of the student.** Tests and written assignments will include content covered in class or in the assigned readings. See University Catalogue.

COVID-19 Note: Students attending class are expected to follow Xavier safety guidelines related to COVID-19. Wearing a mask in class is mandatory, and students refusing to do so will be asked to leave class. Social distancing must also be practiced, and classrooms are set up to make it clear where you should locate yourself in order to maintain adequate social distancing. Classroom surfaces will be cleaned at the beginning and end of every class period, and faculty ask that you assist them in this process. Further details on Xavier's COVID-19 policy can be found at www.xavier.edu/coronavirus.

Attendance Procedure:

- 1) You will be documented as **present** if you are in class and on time.
- 2) The instructor will document student attendance.
- 3) Remote Attendance Policy: Students attending the class remotely are expected to follow all in-class requirements: arrive on-time and follow and required dress code. In addition, students are expected to have both video and audio running for the entirety of the course.
- 4) **Excused absences include:**
 - 1) A funeral, with a program, obituary or holy card
 - 2) A required activity for another class or university sponsored athletic event, with a memo from the professor or program director
 - 3) A documented medical event, with dated, timed and signed documentation (all other Protected Health Information may be redacted)
 - 4) A documented legal event, with dated, timed and signed documentation (all other confidential information may be redacted)
 - 5) Religious holidays not otherwise taken as holidays by the university
 - 6) During the COVID-19 pandemic, illness is an excused absence.

You have **one week from the date of your return** to class to submit documentation for excused absences to your instructor. Failure to submit documentation within one week will result in your absence being unexcused.

5) Unexcused absences

Unexcused absences include, for example:

- Social events, such as weddings, parties, etc.
- Events related to outside employment, such as job training, orientation, business travel, etc.
- Personal travel, such as leaving campus early or coming back late from a holiday break
- Problems due to poor planning on your part, such as missing class due to oversleeping or exhaustion due to staying up all night to complete an assignment, etc.
- Job Interviews that could be scheduled outside of class time
- Pet-related absences (i.e. veterinary appointment)

You are allowed a specified number of unexcused absences without penalty.

- One unexcused absence for courses that meet once per week
- Two unexcused absences for courses that meet twice per week

- Three unexcused absences for courses that meet three times per week

You are advised to save these “free” days for unavoidable weather, minor illness and personal events.

Penalty: Unexcused absences, greater than the number specified above, will result in the reduction of the student’s final grade of 1.5% for each unexcused absence.

6) Unexcused absences and quizzes/tests

In the event that a student misses class for a reason **that is not excused**, even if within the allowable number of unexcused absences, quizzes and tests missed will still incur a penalty, at the discretion of the faculty member. Note several things:

- Faculty may refuse a student the chance to make up the text.
- The recommended penalty is a 20% deduction if the test/quiz is taken within 24 hours of the scheduled time, and 10% additional for each 24 hour delay after that. Faculty may choose a penalty that is harsher or less harsh.
- It is the student’s responsibility to reach out to inquire about a makeup exam, and students must work around the faculty member’s schedule.
- If you plan ahead (i.e. you know you are going to miss a class well in advance for an unexcused reason), tell your professor ASAP! They will be more likely to be flexible with you.

7) COVID-19 Pandemic policy change related to **in-class** attendance: “Xavier University is committed to the health, safety, and care of all individuals within our community. As part of our Ignatian values and in the spirit of *cura personalis*, Xavier University wishes to disincentivize class attendance when students may be sick. For the duration of the pandemic, students who are ill will be excused from classes.”

- Students must adhere to University health and wellness procedures for self-evaluation, follow-up, and quarantine as necessary.
- Students who are in quarantine due to close contact with a person who has tested positive for COVID-19, but who are not themselves symptomatic, are expected to attend class remotely and complete course assignments.
- Untruthful student claims about illness may be regarded as a violation of the Student Handbook.

Students must communicate with their professor about such absences, and should do so as close to the start of the class they are missing as possible. If you need to self-quarantine, you need to communicate with your professor the period of time you will be missing.

- Students who are able should attend class virtually when their health does not allow them to be in class, but they are well enough to attend remotely.

- 8) Final determination is at the discretion of the instructor for the course. Courses with teams, projects and community service may have additional specifications.

Assignments:

All assignments will have a description that is available via Canvas. All papers and the group project should be written utilizing APA format. Purdue University has a very helpful resource for APA style, utilize the following website:

https://owl.purdue.edu/owl/research_and_citation/apa_style/apa_formatting_and_style_guide/general_format.html

Papers and the group project should also be turned in via Canvas. Papers will be graded via Speed Grader through Canvas, and returned with comments you will be able to access through the Grade Book.

In general, you should expect to receive feedback on assignments within 1-2 weeks of submission.

Here is a brief description of each assignment:

Quizzes:

There will be 8 quizzes throughout the semester. Each quiz will be worth 7.5 points. These quizzes will be available to complete and submit via Canvas.

Exams:

There will be one exam, which will cover Chapters 1-5 of the text. It will be worth 15 points (15% of your final grade).

Final poster presentation video:

In place of a final exam, a recorded poster presentation will be submitted. Concepts that are covered during the second part of the semester will be evaluated as part of your poster presentation submission. This will be worth 20 points (20% of your final grade).

Participation:

For in class:

Participation will count for 5% of your final grade. Active participation includes:

- Being in class
- Being on time to class
- Being awake and alert in class, not focused on other things (i.e. other homework or activities)
- Asking questions
- Offering your perspectives
- Sharing information
- Being active in small group activities
- Showing respect to your classmates, guests, faculty, etc.

For online:

- Being active in the course: There should be evidence that you have been on the course site multiple times per week.
- Asking questions about the material covered.
- Offering your perspectives and sharing information: Your input is key to this class.

If you are engaged in class, this should be an easy 5% to achieve.

Business Casual Dress:

Business casual dress is expected on days where a speaker is coming to our class, and for student presentations. Business casual dress includes:

- Slacks or khakis, not wrinkled!
- Dress shirt or solid color polo shirt, not wrinkled
- Jacket (though not required of business casual)
- Tie (though not required of business casual)
- Dress shoes (not tennis shoes)
- Skirts (dress, not casual)
- Blouses
- Shoes not open-toed

Canvas:

Canvas will be used in a variety of ways for this class. The syllabus, assignment descriptions, and articles/chapters outside of the class will all be available via Canvas. In the spirit of sustainability, such materials will not be printed off and handed out in class.

Papers and the group project should also be turned in via Canvas through “Turnitin”. Papers will be graded and returned via the Turnitin feature of Canvas.

Academic Honesty:

“The pursuit of truth demands high standards of personal honesty. Academic and professional life requires a trust based upon integrity of the written and spoken word. Accordingly, violations of certain standards of ethical behavior will not be tolerated at Xavier University. These include theft, cheating, plagiarism, unauthorized assistance in assignments and tests, unauthorized copying of computer software, the falsification of results and material submitted in reports or admission documents, and the falsification of any academic record including letters of recommendation. All work submitted for academic evaluation must be the student’s own. Certainly, the activities of other scholars will influence all students. However, the direct and unattributed use of another’s efforts is prohibited as is the use of any work untruthfully submitted as one’s own. Penalties for violations of this policy may include one or more of the following: a zero for that assignment or test, an “F” in the course, and expulsion from the University. The dean of the college in which the student is enrolled is to be informed in writing of all such incidents, though the teacher has full authority to assign the grade for the assignment, test, or course. If disputes of interpretation arise, the student, faculty member, and chair should attempt to resolve the difficulty. If this is unsatisfactory, the dean will rule in the matter. As a final appeal, the academic vice president will call a committee of tenured faculty for the purpose of making a final determination.”

Faculty Note:

In addition to the above (taken directly from the University Catalog), please be aware that cutting and pasting from the Internet is plagiarism, and will be treated in the same manner as any other type of plagiarism. If you use more than three words written by someone else, I expect it to be in quotes. When you are writing you should use your own words and thoughts, not those of anyone else. You **may not** take a sentence and change one to two words and call it your own.

Technology Policy

Whether or not laptops, tablets, phones, etc. are allowed for use during a class is at the discretion of the instructor. If an instructor chooses to allow their use, the following language applies:

Students may utilize laptops or tablets during class ONLY for class-related activities. This would include note taking, viewing lecture power points, or viewing other class-related materials. Other use of technology (i.e. social networking, viewing unrelated websites, doing other homework, etc.) is not acceptable. The instructor reserves the right to prohibit students who abuse this policy from using technology during class.

Students with Disabilities

Xavier University is committed to providing equal opportunity and access to the educational experience through the provision of reasonable accommodations. For students who have an accommodations letter from Disability Services, it is essential that you email the letter and meet with me as soon as possible to discuss your disability-related accommodation needs for this course.

If you have not yet met with Disability Services to arrange accommodations, it is necessary that you do so as soon as possible as accommodations are not retroactive. If you would like information regarding eligibility for academic accommodations due to barriers associated with a potential disability, please contact Cassandra Jones, Director of Disability Services, by phone at 513-745-3280, in person on the Fifth Floor of the Conaton Learning Commons, Room 514, or via e-mail at jonesc20@xavier.edu to coordinate reasonable accommodations as soon as possible. Please contact Disability Services well in advance of needing an accommodation as the registration process can take several weeks.

It is important to note that any disability-related information including accommodations is confidential.

Late Assignment Policy:

Late assignments will accrue a penalty of 10% per day the assignment is late. An assignment is considered one day late if it is submitted past the identified due date/time. It is considered two days late if it is submitted any more than 24 hours past the identified due date/time, and so forth. This includes weekends! Once an assignment is more than 10 days late, it will become a zero and will not be accepted for credit.

If a student wants an extension for an assignment, this must be received no less than 48 hours before the assigned due date/time. Extensions are not guaranteed, and are at the discretion of the instructor. Extensions may include a late penalty.

Final Grade:

Quizzes:

8 quizzes, worth 60% of your final grade

Exams:

1 Exam, worth 15% of your final grade

Projects:

1 recorded research poster presentation, worth 20% of your final grade

Participation, worth 5% of your final grade

Grading Scale (Note: .5% will be rounded up):

A	93.0-100%
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	60.0-66.9%
F	below 60.0%

See final page for class schedule

CLASS SCHEDULE

Week	Session (Dates)	Topic	Readings	Assignment
1	M 8/17	Study Designs		
1	W 8/19	Study Designs	Ch. 1	
1	F 8/21	Framingham cohort study		
2	M 8/24	Sample Size	Ch. 2	
2	W 8/26	Sample size calculations using SAS		
2	F 8/28	Prevalence/Incidence relationship	Ch. 3	Quiz 1 (Ch 1-2)
3	M 8/31	Risk difference and population attributable risk		
3	W 9/2	Odds ratios and relative risks using SAS		
3	F 9/4	Dichotomous variables	Ch. 4	Quiz 2 (Ch 3)
4	M 9/7	Descriptive statistics and bar charts for dichotomous variables using SAS		
4	W 9/9	Ordinal and categorical variables		
4	F 9/11	Descriptive statistics for categorical and ordinal variables; histograms for ordinal variables using SAS		
5	M 9/14	Continuous variables		
5	W 9/16	Descriptive statistics and box and whisker plots for continuous variables using SAS		
5	F 9/18	Calculating probabilities using the binomial formula in SAS	Ch. 5	Quiz 3 (Ch 4)
6	M 9/21	Calculating probabilities using the PROBNORM function		
6	W 9/23	Sensitivity and Specificity using SAS		
6	F 9/25	Questions for Exam 1		Quiz 4 (Ch 5)
7	M 9/28	Exam 1: Chapters 1-5		Exam 1 – Chapters 1 - 5
7	W 9/30	CI calcs for: 1-sample continuous outcome; 1 sample, dichotomous outcome	Ch. 6	
7	F 10/2	CI calcs for: 2 independent samples, continuous outcome; matched samples, continuous outcome		
8	M 10/5	CI calcs for: 2 independent samples, dichotomous outcome (CI for Relative Risk and Odds Ratio)		
8	W 10/7	Confounding	Ch. 9	Quiz 5 (Ch 6)
8	F 10/9	Effect modification		
9	M 10/12	Assessing Normality using SAS		
9	W 10/14	Correlation using SAS		
9	F 10/16	Fall Break		
10	M 10/19	Simple Linear Regression using SAS		
10	W 10/21	Multiple Linear Regression Analysis using SAS		
10	F 10/23	Logistic regression Analysis using SAS		
11	M 10/26	Multiple Logistic Regression Analysis using SAS		
11	W 10/28	Non-Parametric tests: Mann-Whitney U	Ch. 10	Quiz 6 (Ch 9)
11	F 10/30	Wilcoxon Signed rank test		

12	M 11/2	Non-Parametric tests: Kruskal-Wallis		
12	W 11/4	Data visualization: design principles	Ch. 12	Quiz 7(Ch 10)
12	F 11/6	Key features of effective tables and figures		
13	M 11/9	Creating tables to display data and statistical results		
13	W 11/11	Creating tables to display data and statistical results		
13	F 11/13	Creating figures to display data and statistical results		
14	M 11/16	Creating figures to display data and statistical results		
14	W 11/18	Final poster presentation workshop		Quiz 8 (Ch 12)
14	F 11/20	Final poster presentation workshop		
15	M 11/30	Submission of final research poster presentation video		Final research poster presentation video