Stony Brook
School *of* Health Technology
and Management

Health Science Department
Masters in Applied Health Informatics

Course Title: HHA 506: Research Design and Methodology for Health Informatics Professionals (3 credits)
Course Location: Classroom 134/134 Fine Arts Building, Southampton Campus
Instructor: Anthony S. Romano, MPH
Email address: anthony.romano@stonybrook.edu

Description: This hybrid course provides an in-depth overview of quantitative, qualitative, and mixed-methods research designs and methodologies. The student will analyze, evaluate and practice the philosophical foundations, characteristics, strengths, and limitations of quantitative, qualitative, and mixed methods research designs and methodologies most appropriate to the practice of health informatics. Emphasis on critical review and techniques of applied research and evaluation.

Goal: To provide a strong foundation in the fundamentals of evaluation, research design and methodology as required for health informatics professionals.

Course Objectives: Upon completion of this course, students will be able to:

1. Analyze the major strengths and limitations inherent in various types of research designs.
2. Critique sections (purpose, literature review, design, and data collection methods) of a research article.
3. Demonstrate an understanding of how the protection of human subjects has evolved in research over time.
4. Evaluate an article as it relates to the protection of human subjects in a qualitative and quantitative research study.
5. Demonstrate the ability to distinguish between independent and dependent variables.
6. Demonstrate the ability to distinguish problems which can be empirically researched from those which cannot.
7. Describe the most frequently utilized qualitative, quantitative, and mixed designs in health informatics research.
8. Contrast experimental and quasi-experimental designs.
9. Describe various methods of population sampling and subject selection.
10. Analyze the advantages and limitations inherent in commonly utilized sampling methods.

11. Apply the appropriate research (quantitative, qualitative, and mixed-method) designs to research problems/questions in a case study.
12. Construct research questions for a specific research problem utilizing a specific research design.
13. Describe the concepts of reliability and validity in a research design.
14. Discuss strategies that can be utilized to ensure the validity of qualitative research.
15. Distinguish between a poorly designed and an effectively designed questionnaire.
16. Evaluate different types of measurement scales.
17. Assess the ability of the collected data/information to answer research questions.
18. Discuss the concepts generalization, correlation, and causality.
19. Describe the advantages and limitations inherent in the different roles an observer may adopt.
20. Distinguish between preliminary, primary, and secondary literature sources.
21. Discuss research outcomes that add to the health IT knowledge base and contribute to theory.
22. Describe null, directional, and non-directional hypotheses.
23. Contrast data collection methods such as structured questionnaires, unstructured interviews, focus groups, and open-ended interviews.
24. Critique the advantages and limitations in various qualitative data analysis methodologies.
25. Conduct a focused literature review for a research project.
26. Completion of the Collaborative Institutional Training Initiative (CITI) course.

Required Text:
Creswell, J. W. (2014). *Research Design: Qualitative, quantitative, and mixed method approaches* (4th ed). Los Angeles, CA: Sage Publications, Inc.

Required Reading: TBA

Teaching Strategies: This will be delivered half in the classroom and half online. Teaching strategies for in-class time will include lectures, discussions, case studies, problem-based learning, presentations, and small or large group discussions. Online sessions will require students to read, synthesize information, write summaries, and provide feedback and comments on student posts and/or assignments.

Attendance: Attendance in class is mandatory.

Participation: All students are responsible for participating in in-class and online discussions. Including but not limited to:

- Critical yet constructive critique of classmates 'comments.
- Asking respectful yet challenging questions during face-to-face and online discussion.
- Demonstrating courtesy, respect for differences of opinion, and sensitivity when dealing with others.

Course Evaluation: Performance will be evaluated as follows using the grading rubrics provided.

5 Quizzes	10%
Online Discussion Participation	20%
4 Written Assignments	20%
Research Proposal	30%
Final	20%

CITI:

If you do not have an account, please click here for a quick overview of how to register as a new learner. After you have read the information on how to register for CITI training, go to https://www.citiprogram.org to sign in.

You must complete two courses:

1) Human Subjects Protection in Social and Behavioral Sciences Course
2) The Responsible Conduct of Research (RCR) in Social and Behavioral Sciences Course.

Please email your certificate to me once completed.

Written Assignments

There will be 4 written assignments due throughout the course
Will culminate in a fifth – a final Research Proposal

Due Dates:

1. 7/16/2018 – Creating a research question and providing a rationale (Introduction)
2. 7/23/2018 – Conducting a brief literature review (Background)
3. 7/30/2018 – Choosing methods and justifying that choice (Methods)
4. 8/06/2018 – Discussing an analysis plan and the potential impact of your study (Impact/Conclusion)

Final Research Proposal Due:

5. 8/15/2018 – Putting it all together

Note on Written assignments:

When evaluating assignments and all written material, emphasis will be placed on the student's ability to concisely and effectively communicate integration of appropriate literature; utilization of analytical skills; and synthesis course concepts/theories to develop new insights, ideas, or actions.

Note to students:

This course has been developed for the serious student of healthcare informatics. Information will be presented in sequential progression for the progressive development of requisite knowledge, skills, and competencies. This requires sustained and timely student preparation and participation. The professor will provide feedback and monitor progress; students are expected to be prepared to discuss the materials assigned for each class whether face-to-face or on-line.

Blackboard:

Students will find all course documents or announcements on Blackboard. You should check Blackboard several times a week for updates or changes to class and/or assignments. Please check student personal information to be sure that the email address is current. Blackboard is found at: http://blackboard.sunysb.edu

For help or more information: http://www.sinc.sunysb.edu/helpdesk/docs/blackboard/bbstudent.php

For problems with logging in, go to the helpdesk in the Main Library SINC Site or the Union SINC Site. You may also call: 631-632-9602 or email: helpme@ic.sunysb.edu

- **Plagiarism Policy:**
  Plagiarism is simply the use of others' words and/or ideas without clearly acknowledging their source. As students, you are learning about other people's ideas in your course texts, your instructors' lectures, in-class discussions, and when doing your own research. When you incorporate those words and ideas into your own work, it is of the utmost importance that you give credit where it is due. Plagiarism, intentional or unintentional, is considered academic dishonesty and all instances will be reported to the Academic Judiciary. To avoid plagiarism, you must give the original author credit whenever you use another person's ideas, opinions, drawings, or theories as well as any facts or any other pieces of information that are not common knowledge. Additionally, quotations of another person's actual spoken or written words; or a close paraphrasing of another person's spoken or written words must also be referenced. Accurately citing all sources and putting direct quotations – of even a few key words – in quotation marks are required. For further information on plagiarism and the policies regarding academic dishonesty go to your student manual.

  Etiquette:
  When participating in any aspect of an online course, there are rules of etiquette that need to be followed. These rules will be observed; students who fail to follow these rules of etiquette will lose points from their discussion board grades. Please do not use winks, smiley faces, etc. in any of your postings. Read the rules that are found posted on this website: http://matcmadison.edu/online-etiquette-guide.

Basic rules include the following:
Respect others and their opinions. In online learning, students from various backgrounds come together to learn. It is important to respect the feelings and opinions of other students even if they may differ from your own.

- Tone down your language. Given the absence of face-to-face clues, written text can easily be misinterpreted. Avoid the use of strong or offensive language and the excessive use of exclamation points. If you feel particularly strongly about a point, it may be best to write it first as a draft and then to review it, before posting it, in order to remove any strong language.
- Pick the right tone. Since we depend on the written word in online learning, it is especially important to choose the right words to convey your meaning. For example, sarcasm is harder to detect when you read the words rather than hearing them.

- Keep a straight face. In general, avoid humor and sarcasm. These frequently depend either on facial or tone of voice cues absent in text communication or on familiarity with the reader.
- Consider others' privacy. Ask for permission if you want to forward someone's email messages to third parties. Keep in mind that all private email mail is considered copyrighted by the original author.
- Avoid inappropriate material. Emailing should be used for course content/information; classmates' emails should not be used for private soliciting.
  Be forgiving. If someone states something that you find offensive, mention this directly to the professor. Remember that the person contributing to the discussion might be new to this form of communication. What you find offensive may quite possibly have been unintended and can best be cleared up by the professor.
- Think before you hit the send button. Think carefully about the content of your message before contributing it. Once sent to the group, there is no taking it back. Grammar and spelling errors reflect on you and your audience might not be able to decode misspelled words or poorly constructed sentences.
- Test for clarity. Messages may often appear perfectly clear to you as you compose them but turn out to be perfectly obtuse to your reader. One way to test for clarity is to read your message aloud to see if it flows smoothly. If you can read it to another person before posting it, even better.
- Brevity is best. Be as concise as possible when contributing to a discussion. Your points might me missed if hidden in a flood of text.
- Stick to the point. Contributions to a discussion should stick to the subject. Don't waste others' time by going off on irrelevant tangents.
- Frivolous email. Don't forward jokes, "chain letters" or unimportant email to other students without their permission. Not only does it fill up their mailboxes but may offend people who do not share the same sense of humor or who are tired of these types of email.
- Read first, write later. Don't add your comments to a discussion before reading the comments of other students unless the assignment specifically asks you to. Doing so is tantamount to ignoring your fellow students and is rude. Comments related to the content of previous messages should be posted under them to keep related topics organized, and you should specify the person and the particular point you are following up on.
- Netspeak. Although electronic communication is still young, many conventions have already been established. **DO NOT TYPE IN ALL CAPS**. This is regarded as shouting and is out of place in a classroom. Acronyms and emoticons (arrangements of symbols to express emotions) are popular, but excessive use of them can make your message difficult to read.

Americans with Disabilities Act:
If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Disability Support Services, ECC (Educational Communications Center) Building, Room 128, (631)632-6748. They will determine with you what accommodations, if any, are necessary and appropriate. All information and documentation is confidential. https://web.stonybrook.edu/newfaculty/StudentResources/Pages/DisabilitySupportServices.aspx.

Academic Integrity:
Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty is required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty please refer to the academic judiciary website at http://www.stonybrook.edu/uaa/academicjudiciary/

Critical Incident Management:
Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of University Community Standards any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures.

Grading Scale Course grades on a 100 point scale are:
A (100 – 93); A- (92 - 90); B+ (89-87); B (86-83); B- (82-80); C+ (79-77); C (76-73); C- (72-70); F (69 OR LOWER).

Lecture - Type	Date	Theme	Topics	Readings and Podcasts Due	Assignment Due
1 – In Class	**7/09/2018**	**Introduction to Research:** *Quantitative, Qualitative and Mixed Methods* **Textbook Chapter: 1**	• What is research? Why do we do it? • How do we design a research question? • How do we answer that question? • What types of methods can we use to approach our research Questions? • Does the way we collect our data matter? • Data and Methods	• **Chapter 1 of Text Book**	
2 – Web	7/11/2018			• Planet Money Episodes: 796 and 677	• **Quiz 1**
3 – In Class	**7/16/2018**	**Building a Basis:** *Literature Reviews, IRB, and Sampling* **Textbook Chapters: 2 and 7**	• Where do we start when we design a study? – why does it matter? • How do we select the people who will be in our study – does it matter? • What do we need to be sensitive to when we design a study? • Does our research question effect the way we sample our target population?	• **Chapter 2 and 7 of Text Book** • **All CITI Materials** • **Won Oak Kim: IRB and Ethical Issues…**	• **Complete CITI Training** • **Writing Assignment 1**
4 – Web	7/18/2018			• When Scientists Develop Products From Personal Medical Data, Who Gets To Profit? • 'Henrietta Lacks': A Donor's Immortal Legacy •	• **Quiz 2**
5 – In Class	**7/23/2018**	**Designing a Survey:** *Accounting for our intent, capability and limitations* **Textbook Chapters: 3, 8,9 and 10**	• Designing qualitative and quantitative survey questions – the difference. • How do we capture the data we need to answer the questions we have asked? • How can data be stored, collected and analyzed? • Review of data types and analytic plans	• **Chapter 3 and 7 of Text Book** • **Cyberbullying Victimization and Mental Health in Adolescents…**	• **Writing Assignment 2**
6 – Web	7/25/2018			• When Great Minds Think Unalike: Inside Science's 'Replication Crisis'	• **Quiz 3**
7 – In Class	**7/30/2018**	**Analysis and Dissemination:** *Common methods of data analysis – common ways to misinterpret data* **Textbook Chapters:**	• What are some common ways to look at our data? – does the type of study we conducted change the way we interpret our results? • How can we interpret our data so it makes sense to stakeholders? • What are some common ways people misinterpret scientific data?	• **Adoption of EMR by Physicians in Canada**	• **Writing Assignment 3**
8 – Web	8/01/2018			• Peer Assignment Review	• **Quiz 4**
9 – In Class	**8/06/2018**	**Course Review; Analytic Example; Case Studies** **Textbook Chapters: 4**	• What are the steps to doing data analytics in the workplace? We'll walk through an example. • Case Studies: as a review of what we've covered in this course, you'll work together to organize and identify study types and designs.	• **Toking, Vaping, and Eating for Health or Fun**	• **Writing Assignment 4**
10 – Web	8/08/2018			• Hidden Brain: I'm Right, You're Wrong	
11 – In Class FINAL	**8/13/2018**	**Final (IN CLASS on 8/13/2018)**			
12 – Web	8/15/2018				• **Research Proposal Due on: 8/15/2018**