COURSE SYLLABUS – SUMMER INSTITUTE 2016
Introduction to Data Management Using American Indian Health Data
221.672.11
2 Credits
July 18 - 22, 2016, 1:30 pm to 5:00 pm
Classroom W5008

Course Faculty
Maria Deloria Knoll, PhD (mknoll2@jhu.edu)
Nadine Caron, MD, MPH (nadinecaron@yahoo.com)

Guest Lecturers
Eugene Millar, PhD
Christine Prosperi, ScM (cprospe1@jhu.edu)

Teaching Assistant
Amanda Driscoll, MHS (adrisco1@jhu.edu)

Course Description
Introduces Native American tribal health leaders, health professionals, health paraprofessionals, and others interested in Native American health concerns to the basic concepts of data management. Designed for persons who may not have previous formal training in data management but may be working to determine or to address tribal priorities for health care, or working or interested in clinical research or public health within tribal communities. The course is designed to prepare students for the core courses on data management methods offered by the School of Public Health. The course introduces students to basic principles and methods of data management using examples pertinent to American Indian health. Individuals do not have to be Native American, nor work with Native American communities, to participate in the course since the concepts can be translated to many public health settings; however, the examples and assignments will be drawn from Native American settings.

Teaching methods will include lectures, discussions, group work, and brief class presentations.

Course Objective
The purpose of this course is: (1) to provide a basic understanding of the principles and methods for data management in quantitative and qualitative research; and (2) to develop skills for practical application of these methods in research projects.

Assignments, Evaluation and Grading Policy
Participant assessment will be based on the following: 1) Attendance and participation, 2) Homework/ take-home questions, and 3) Daily in-class group exercises. Students taking the course for credit will receive a letter grade. Students who are not taking the course for credit will receive a pass/fail grade based on class participation and daily in-class group exercises.

	Proportion of Grade (Credit or non-Credit)
Class Attendance /Participation	20%
Homework (4 total)	40%
Daily In-Class Group Exercises	40%

Structure of the class

The traditional method of in-class lecture and homework exercises will be flipped in this course. Lectures will be available printed or electronically to read as homework, and exercises will be completed in class. The reading homework will provide the context and explanation for how to do the work the next day. In this way, the instructors will be on hand to assist with completion of the exercises and the time together can be spent in discussion where we can learn from each other. Working in groups is encouraged to maximize learning from each other.

Optional Office Hours with course faculty will be available 30 minutes prior to the start of class (1:00 – 1:30) Tuesday– Friday. Room number W5008 Wednesday to Friday; Tuesday W4013.

Guidelines for Daily Homework

Take-home reading (in the form of 'lecture slides') and associated questions will be completed individually as homework each evening to prepare for the in-class work the next day. Questions will be a combination of true/false, multiple choice and short answer. All students are required to complete homework questions. Homework is due by the start of class the following day at 1:30 pm, and will be graded and returned on the following day. The question responses will be discussed at the beginning of class and therefore questions turned in after this time will not be accepted (i.e., graded as 0 points). Homework may be submitted electronically (emailed to Amanda [adrisco1@jhu.edu]) or as a paper copy turned in at the start of the class. Homework questions turned in on Friday, July 22nd, will be graded, then scanned and emailed back to students.

Guidelines for In-Class Group Exercises

Daily group exercises will be assigned and instructions provided in class each day. You will be given time in class to work on exercises. Most exercises are intended to be completed in class, but some can be taken home to finalize. Exercises will be turned in at the start of the next class and will be reviewed by course faculty. Faculty will return exercises daily with recommendations for revisions.

Students will select a partner (i.e., exercises will be done working as a team in pairs) with assistance from the course faculty and other students (collaboration is encouraged). It is expected that each member of a team fully participate in all group activities, whether you are taking the course for credit or non-credit.

Readings

All readings for this course are offered as "recommended" readings. These will be available electronically via pdf or photocopy if requested.

Dropbox location for course materials:

https://www.dropbox.com/sh/txt0s0l7m7csjvq/AABlgKNkAW1B_XEFzBYolN2Ma?dl=0

Day 1: Monday, July 18, 2016

Time	Activity	Presenter
1:30 pm – 2:15 pm	• Welcome, introductions, opening prayer, course overview	Maria Deloria-Knoll Nadine Caron Allison Barlow
2:15 pm – 3:00 pm	**Session 1:** **Data Life Cycle**	Maria Deloria-Knoll
	Learning objectives: • Illustrate the purpose and objectives of data management • Develop an understanding of the data life cycle process and how the collection and use of data can help improve research and health services • Complete "Study Staff Log" to create student pairings	
3:00 pm – 3:15 pm	*Break*	
3:15 pm – 4:00 pm	**Session 1, Exercise** • Create study flow chart and activity timeline **[TO BE TURNED IN]**	Group work
4:00 pm –4:15 pm	**Session 2:** **Overview of Study Design**	Maria Deloria-Knoll
	Learning objectives: • Review types of study designs used in epidemiologic and public health research • Discuss how the types of study affects feasibility and quality of data collection in research	
4:15 pm – 5:00 pm	**Session 2, Exercise** • Review impact of study design on data collection methods and quality	Group work
5:00 pm	**Close of Course for Day**	

HOMEWORK	• **Review slides:**
	   o "Day2_S1_TAKEHOME_DataCollectionForms_DataDict_v1.0" and
	   o "Day2_S1_TAKEHOME_Documentation_v1.0"
	• **Complete:** Homework1_DataCollection	

Recommended Readings to prepare for Day 1
- Rahman QS et al. Centralized Data Management in a Multicountry, Multisite Population-based Study. *The Pediatric Infectious Disease Journal* 2016; 35:S23-S28
- McFadden ET et al. Approaches to Data Management. Cont Clin Trials 1995; 16:30S-33S – This provides an overview of most aspects of data management. It is a lengthy article so we do not expect that you will read every word, but scan the topic areas to get a sense of the breadth of data management activities and read those that interest you. This may also serve as a resource in the future or for reading more about the implementation logistics of topics raised in class.
- Common Research Designs Used in Epidemiology. *Epidemiology, Biostatistics and Preventive Medicine.* Jekel JF et al. pp.66-72.

Day 2: Tuesday, July 19, 2016

Time	Activity	Presenter
12:30 – 1:15 pm	Presentation about JHSPH Graduate Programs	Hopkins Admissions Office Representative
1:00 – 1:30 pm	**Optional** – Office hours with course faculty in **Room 4013**	
1:30 pm	Homework #1 is due	
1:30 pm – 2:00 pm	**Creating Data Collection Forms** **Data Dictionary** **Study Documentation**	Christine Prosperi
	Learning objectives for the day: • Homework review • Understand the importance of maintaining documentation and data standards in the conduct of epidemiologic studies • Identify the key elements of the data collection form • Identify the key components of a data dictionary and create a basic dictionary structure • Create a screening log • Create a basic data collection form • Code the data collection form for data entry purposes	
2:00 pm – 2:45 pm	**Exercises 1 and 2**	Group work
	• Evaluate a CRF [15 minutes] • Design a CRF [30 minutes] **[TO BE TURNED IN]**	
2:45 – 3:00 pm	*Break*	
3:00 pm – 4:30 pm	**Exercises 3 and 4**	Group work
	• Create a data dictionary to correspond with the data collection form [15 minutes] **[TO BE TURNED IN]** • Screening, enrollment, and data collection using proper study documentation [15 minutes]	
4:30 pm – 5:00 pm	**Discussion**	All
5:00 pm	**Close of Course for Day**	
HOMEWORK	• **Review slides** "Day3_S1_TAKEHOME_DatabaseDesign_v1.0 " • **Complete:** Homework2_DatabaseDesign	

Recommended Readings to prepare for Day 2
• Hosking JD et al. Data Collection and Transcription. Cont Clin Trials 1995; 16:66S-84S – Read highlighted sections

Day 3: Wednesday, July 20, 2016

Time	Activity	Presenter
12:15 – 1:15 pm	**Optional** – Lunch at Center for American Indian Health – all Institute students and faculty are invited, at 415 N. Washington Street, 4th Floor Open Conference Room.	
1:00 – 1:30 pm	**Optional** – Office hours with course faculty in **Room W5008**	
1:30 pm	Homework #2 is due	
1:30 pm – 3:00 pm	**Session 1: Fundamentals of Database Design**	Eugene Millar
	Learning objectives: • Homework Review • Appreciate the variety of different software packages for database design and implementation • Identify the key components of a database • Identify errors and inconsistencies in databases, how to avoid them, and how to resolve them	
3:00 pm – 3:15 pm	*Break*	
3:15 pm – 5:00 pm	**Session 2: Exercises 1 and 2**	Group work
	• Create and enter data into an Access Database **[TO BE TURNED IN]** • Analyze and explore data in Excel (Optional)	
5:00 pm	**Close of Course for Day**	
HOMEWORK	• **Review slides** "Day4_S1_TAKEHOME_DataQuality_v1.0 " • **Complete:** Homework3_DataQuality	

Recommended Readings to prepare for Day 3
- Highlighted sections from McFadden ET et al. Approaches to Data Management. Cont Clin Trials 1995; 16:30S-33S
    - Software and Hardware Selection
        - Choosing Database Management Software (pg 42S)
        - Database Types and Models and Relational Model (pg 43S)
        - Choice of Database Model (pg 46S)
    - Database Management System Administration
        - Database Design (pg 53S-55S)

Day 4: Thursday, July 21, 2016

Time	Activity	Presenter
1:00 – 1:30 pm	**Optional** – Office hours with course faculty in **Room W5008**	
1:30 pm	Homework #3 is due	
1:30 pm – 2:00 pm	**Session 1: Methods of Data Entry and Ensuring Data Quality**	Amanda Driscoll
	Learning objectives: • Review homework questions • Highlight tools and strategies to maximize efficiency and to minimize error in data entry procedures • Cite commonly used methods of summarizing data, identifying erroneous data and methods of resolving them • Recognize the importance of maintaining study documentation of data changes	
2:00 pm – 3:30 pm	**Session 1, Exercise 1**	Group work
	• Data quality **[TO BE TURNED IN]**	
3:30 pm – 3:45 pm	*Break*	
3:45 pm – 5:00 pm	**Session 2: Presentation and Discussion of an Electronic Data Capture System: PERCH Study RedCap**	Nora Watson (Emmes) Christine Prosperi Lindsay Grant (CAIH)
5:00 pm	**Close of Course for Day**	
HOMEWORK	• **Review slides** "Day5_S1_TAKEHOME_Ethics_DataSecurity_v1.0" • **Complete:** Homework4_Ethics_DataSecurity	

Recommended Readings to prepare for Day 4
- Gassman_DataQAMonitorReport_ContClinTrials_1995 104S-36S – This provides an overview of most aspects of quality assessment and data cleaning. It is a lengthy article so we do not expect that you will read every word, but scan the topic areas to get a sense of the breadth of related activities and read those that interest you (pay attention to any highlighted sections). This may also serve as a resource in the future or for reading more about topics raised in class.

Day 5: Friday, July 22, 2016

Time	Activity	Presenter
1:00 – 1:30	**Optional** – Office hours with course faculty in **Room W5008**	
1:30 pm	Homework #4 is due	
1:30 pm – 2:45 pm	**Session 1: Ethics of Research and Data Security**	Nadine Caron
	Learning objectives: • Identify current federal strategies and policies for the protection of health information • Cite various methods of maintaining the security and confidentiality of study data • Appreciate the complexities of data security and confidentiality in relation to electronic data capture and web-based data management systems • Recognize the relationship between data security and ethics	
2:45 pm – 3:00 pm	*Break*	
3:00 pm – 4:15 pm	**Session 2: Merging Our Experiences and Jeopardy!** (Discussion)	All
4:15 pm – 5:00 pm	Course Evaluation & Closeout	All
5:00 pm	**Close of Course**	

Recommended Readings to prepare for Day 5
- Davies C, Collins R. BMJ 2006;333:349-351
- Myers J et al. Am J Public Health 2008;98(5):793-801
- Chapter 9 of the Tri Council Policy Statement: Ethical Conduct for Research Involving Humans [December 2014] (also available onlin*e:* http://www.pre.ethics.gc.ca/eng/policy-politique/initiatives/tcps2-eptc2/chapter9-chapitre9/#toc09-1)