Pre Ph.D. (Pharmacy- PHI)

School of Pharmaceutical & Population Health Informatics

DIT University Dehradun

Course Structure
for
Pre Ph.D. (Population Health Informatics)
Course Work
Session: 2020-21

Pre Ph.D. (Pharmacy- PHI)

PROGRAM STRUCTURE

PhD in Population Health Informatics

First Year

Semester I: **Course Work**   **Total Credits: 17**

Sl. N.	Course Code	Course Name	L	T	P	Credits
1	MB901	Research Methodology	4	0	0	4
2	PHI911	Seminar in Population Health Informatics	1	0	0	1
3	CPE-RPE	Research Publication Ethics	2	0	0	2
Select Any THREE Electives						
4	PHI201	Fundamentals of Environmental Health Sciences	4	0	0	4
5	PHI202	Statistical Analysis of Health Care Data	4	0	0	4
6	PHI203	Mixed Methods Research	4	0	0	4
7	PHI204	Introduction to Population Health Informatics	4	0	0	4
8	PHI205	Introduction to Consumer Health Informatics	4	0	0	4
9	PHI206	Applications of Population Health Informatics	4	0	0	4
10	PHI207	Principles of Population Health: Theory and Methods	4	0	0	4
11	PHI208	Principles of Demography	4	0	0	4

Semester II Onwards: **Thesis Work**

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Subject Code	PHI201	Subject Title	Fundamentals of Environmental Health Sciences						
LTP	4-0-0	Credit	4	Subject Category	Elective	Year	1st	Semester	I

Course Outline: This course will cover the air, water and land pollution effects on environment and public health. It will also provide an insight on global warming and climate change. It will also introduce the concept of toxicology and provide the student with a basic understanding of toxic elements in the environment. This course will also describe the natural disaster and students will learn the aftermath of disaster with public health point of view. Students will learn the concept of sustainability and environmental ethics and recognize the importance of it.

Course Objective:
1) Identify the air, water and soil pollution sources locally as well as globally
2) Assess the adverse effects of pollution on human health
3) Specify the mechanism of toxicity
4) Recognize the impact of environmental disaster on public health
5) Recognize the adverse effects of climate change globally
6) Understand the significance of environmental sustainability
7) Understand the concept of environmental ethics
8) Critically review the public health literature
9) Assess their role as future environmentalist to mitigate pollution effects

Course Pre/Co- requisite (if any): Nil

Detailed Syllabus

UNIT 1	**Air pollution and its impact on human health**	**(4.5 Hrs)**
UNIT 2	**Indoor air pollution…. do we know enough about it?**	**(4.5 Hrs)**
UNIT 3	**How to assess air quality**	**(4.5 Hrs)**
UNIT 4	**Water Pollution and its impact on human health**	**(4.5 Hrs)**
UNIT 5	**How to assess water quality**	**(4.5 Hrs)**
UNIT 6	**Soil pollution and its impact on human health**	**(4.5 Hrs)**
UNIT 7	**How to assess soil quality**	**(4.5 Hrs)**
UNIT 8	**Environmental regulations**	**(4.5 Hrs)**
UNIT 9	**Global warming and climate change**	**(4.5 Hrs)**
UNIT 10	**Environmental Health Ethics**	**(4.5 Hrs)**

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Learning Outcome

    1) Gain foundational knowledge of environmental health
    2) Analyze environmental issues on local as well as on global scale
    3) Specify the regulations and regulatory bodies dealing with the environment
    4) Review and interpret the research articles
    5) Consider their critical role in solving environmental issues

Text book [TB]:

Environmental Health: From Global to Local (Public Health/Environmental Health), 3rd edition 2016 by Howard Frumkin

Reference books [RB]:
Essentials of Environmental Health (Essential Public Health) 3rd by Robert H. Fris

Reference Material

Air pollution and its impact on human health

https://www.ncbi.nlm.nih.gov/pubmed/30528905

Indoor air pollution. Do we know enough about it?

https://www.sciencedirect.com/science/article/pii/S2212609016301960

https://www.sciencedirect.com/science/article/pii/S0160412018324772

Assessment of Air quality

https://www.hindawi.com/journals/jeph/2017/4535142/

Water pollution and its impact on human health

https://environcj.in/wp-content/uploads/issues/2018/12/ECJ-107-115.pdf

How to asses water quality

https://link.springer.com/article/10.1007/s13201-016-0451-y

Soil pollution and its impact on human health

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https://www.ncbi.nlm.nih.gov/pubmed/29245177

How to assess soil quality

https://www.mdpi.com/2571-8789/3/1/5

Environmental regulations

https://www.mdpi.com/1660-4601/16/5/832

Global warming and Climate change

https://ehp.niehs.nih.gov/doi/full/10.1289/EHP669

Environmental Ethics

http://www.allresearchjournal.com/archives/2016/vol2issue3/PartH/2-3-10.pdf

http://docsdrive.com/pdfs/medwelljournals/jeasci/2019/9903-9908.pdf

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Subject Code	PHI202	Subject Title	Statistical Analysis of Healthcare Data						
LTP	4:0:0	**Credit**	4	**Subject Category**	Elective	**Year**	1st	**Semester**	I

Course Outline: The course focuses on integrating study design methods with advanced statistical analyses. Lectures cover theoretical concepts, including confounding, interaction, and pseudo risks and rates, and several analytical methods including linear, logistic, Cox Proportional Hazards, and Poisson regression methods. The course will also touch briefly on other generalized linear models (e.g. relative risk regression) and methods for handling correlated data (GEE, multi-level modelling). The goal of this course is to provide both theoretical and practical experience in analyzing and interpreting healthcare data.

Course Objective:

- Understand the strengths and limitations of the different study designs in epidemiology
- Examine and quantify the role of information bias, selection bias, and confounding in the estimation of measures of association
- Understand the role of interaction on both an additive and multiplicative scale and the implications of scale on estimation
- Apply multivariable regression methods commonly used in epidemiology and understand the assumptions of these regression methods compared to categorical methods
- Understand how to assess confounding, interaction and mediation using multivariable models

Course Pre/Co- requisite (if any): Nil

Detailed Syllabus

UNIT 1	**Intro, Sampling and Data types**	**(5 Hrs)**
UNIT 2	**Probability, Screening and Hypothesis**	**(5 Hrs)**
UNIT 3	**Proportions, Means, Type I and II error**	**(5 Hrs)**
UNIT 4	**Distribution and Sample Proportions**	**(5 Hrs)**
UNIT 5	**t-test, ANOVA, Correlation**	**(5 Hrs)**
UNIT 6	**Regression**	**(5 Hrs)**
UNIT 7	**Linear Regression**	**(5 Hrs)**
UNIT 8	**Categorical Outcome**	**(5 Hrs)**
UNIT 9	**Logistic Regression and Bias**	**(5 Hrs)**

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Learning Outcome

1. Gain basic knowledge of probability and distributions
2. Understand the meaning of causal inference and association
3. Understand and apply different statistical tests
4. Understand the concepts of confounding, mediation and effect modification
5. Be able to comprehend and parse through peer-review articles
6. Learn how to use SAS for data analysis and visualization

Text book [TB]:

Essentials of Biostatistics in Public Health, Lisa M. Sullivan

Reference books [RB]:

John E. Freund's Mathematical Statistics with Applications, Irwin Miller Marylees Miller, Eighth Edition

Reference Material

SAS University Download Instructions : http://www.sas.com/en_us/software/university-edition/download-software.html.
For additional information: http://statisticalhorizons.com/free-sas.

SAS Help
Learn SAS ® in 50 minutes: http://support.sas.com/resources/papers/proceedings11/054-2011.pdf
SAS I: Getting Started: https://stat.utexas.edu/images/SSC/documents/SoftwareTutorials/SAS_GettingStarted.pdf
Link to SAS Online Tutorials: http://www.ats.ucla.edu/stat/sas/notes/default.htm

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Subject Code	PHI204	Subject Title	Introduction to Population Health Informatics						
LTP	4:0:0	**Credit**	4	**Subject Category**	Elective	**Year**	1ˢᵗ	**Semester**	I

Course Outline: The course describes and lists the concepts of informatics and its domains. It teaches one to apply the data, information, and knowledge models to enhancing population health outcomes. Distinguish the various components of computers and their application in population health and explains the role of data standards in population health

Course Objective:

o   Identify and list the concepts of *informatics* and its domains.
o   Explain and apply the data, information, and knowledge models.
o   Distinguish the various components of computers and their application in population health.
o   Explain the role of data standards in population health

Course Pre/Co- requisite (if any): Nil

Detailed Syllabus

UNIT 1	**Origin, History and Concepts of Public Health Informatics**	**(5 Hrs)**
UNIT 2	**Data, Information and Knowledge**	**(5 Hrs)**
UNIT 3	**Computers and Healthcare**	**(5 Hrs)**
UNIT 4	**Visual Analytics**	**(5 Hrs)**
UNIT 5	**Social Media**	**(5 Hrs)**
UNIT 6	**Evaluation of Health Technologies**	**(5 Hrs)**
UNIT 7	**Ethical Issues in Population Health Informatics**	**(5 Hrs)**
UNIT 8	**Managing Health IT Personnel Projects**	**(5 Hrs)**
UNIT 9	**Nutrition Informatics**	**(5 Hrs)**

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Learning Outcome

- Identify and list the concepts of *informatics* and its domains.
- Explain and apply the data, information, and knowledge models.
- Distinguish the various components of computers and their application in population health.
- Explain the role of data standards in population health

Text book [TB]:

Population Health Informatics: "Driving evidence based solutions into Practice"by Ashish Joshi
https://www.jblearning.com/catalog/productdetails/9781284103960

Reference books [RB]:

Public Health Informatics and Information Systems 2nd Edition by J.A.Magnuson, Paul C.Fu.Jr

Reference Material

Origin of health informatics
Back to the Future: Achieving Health Equity Through Health Informatics and Digital Health

https://mhealth.jmir.org/2020/1/e14512/

Data Information and Knowledge
Does use of computer technology for perinatal data collection influence data quality?
https://journals.sagepub.com/doi/pdf/10.1177/1460458214556372

Computers and healthcare
Readiness of healthcare providers for eHealth: the case from primary healthcare centers in Lebanon
https://link.springer.com/article/10.1186/s12913-016-1896-2

Health Information exchange
- **The benefits of health information exchange: an updated systematic review**
- https://academic.oup.com/jamia/article/25/9/1259/4990601

Data standards
Epidemiological Data Challenges: Planning for a More Robust Future Through Data Standards

https://www.frontiersin.org/articles/10.3389/fpubh.2018.00336/full

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Interoperability

Information Technology Interoperability and Use for Better Care and Evidence

https://pdfs.semanticscholar.org/8ada/c196fe8c07dc64fe8b70681bd275eaeea72f.pdf

Social Media

Leveraging Social Media to Promote Public Health Knowledge: Example of Cancer Awareness via Twitter

https://publichealth.jmir.org/2016/1/e17/?utm_source=TrendMD&utm_medium=cpc&utm_campaign=JMIR_TrendMD_1

Digital health interventions

Evaluating digital health interventions: key questions and approaches

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5324832/

Evaluation of health technologies

Designing, Implementing, and Evaluating Mobile Health Technologies for Managing Chronic Conditions in Older Adults: A Scoping Review

https://mhealth.jmir.org/2016/2/e29/

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Subject Code	PHI206	Subject Title	Application of Population Health Informatics					
LTP	4:0:0	**Credit**	4	**Subject Category**	Elective	**Year**	1ˢᵗ	**Semester**	I

Course Outline: Distinguish between the various electronic means of public health data collection and management. Explain the similarities and differences in Tele-health, Electronic Health Record, Personal Health Record, and Hospital Management Information System. Illustrate and apply tool kits to design and develop population health information systems in various settings. Comprehend the various ethical issues relevant to the use of information and communication technologies in population health. Identify current gaps and opportunities in the area of population health informatics.

Course Objective:

- o Distinguish between the various electronic means of public health data collection and management.
- o Explain the similarities and differences in Tele-health, Electronic Health Record, Personal Health Record, and Hospital Management Information System.
- o Illustrate and apply tool kits to design and develop population health information systems in various settings.
- o Comprehend the various ethical issues relevant to the use of information and communication technologies in population health.
- o Identify current gaps and opportunities in the area of population health informatics.

Course Pre/Co- requisite (if any): Nil

Detailed Syllabus

UNIT 1	Application of Population Health Informatics	(4.5 Hrs)
UNIT 2	New Means of Data Collection	(4.5 Hrs)
UNIT 3	Public Health Data Standards	(4.5 Hrs)
UNIT 4	Public Health Data Standards	(4.5 Hrs)
UNIT 5	Visual Analytics	(4.5 Hrs)
UNIT 6	Health Technology Interventions	(4.5 Hrs)
UNIT 7	Ethical Issues in Population Health Informatics	(4.5 Hrs)
UNIT 8	Tele Health	(4.5 Hrs)
UNIT 9	Innovation and Sustainability	(4.5 Hrs)
UNIT 10	Population Health Surveillance	(4.5 Hrs)

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Learning Outcome

- Distinguish between the various electronic means of public health data collection and management.
- Explain the similarities and differences in Tele-health, Electronic Health Record, Personal Health Record, and Hospital Management Information System.
- Illustrate and apply tool kits to design and develop population health information systems in various settings.
- Comprehend the various ethical issues relevant to the use of information and communication technologies in population health.
- Identify current gaps and opportunities in the area of population health informatics.

Text book [TB]:

Population Health Informatics: "Driving evidence based solutions into Practice"by Ashish Joshi
https://www.jblearning.com/catalog/productdetails/9781284103960

Reference books [RB]:

Public Health Informatics and Information Systems 2nd Edition by J.A.Magnuson, Paul C.Fu.Jr

Reference Material

Electronic Health Records
The use of Electronic Health Records to Support Population Health: A Systematic Review of the Literature
https://link.springer.com/content/pdf/10.1007/s10916-018-1075-6.pdf

New Means of Data Collection
Electronic Data Collection in Epidemiological Research
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5052541/

Tele- Health and its application
State of Telehealth
https://www.nejm.org/doi/full/10.1056/NEJMra1601705?casa_token=ZexEmY5AnkoAAAAA:IQ
AaEI7APbgcX1u24B0_UqasRq8_Ke7E4whj9aJEApwDyKr67Vsh0KrtmWcPhEdiMuwKhPiCIuNDEg

Nutrition Informatics
A human centered approach to design a diet app for patients with metabolic syndrome
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6789292/

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M- Health Interventions

The Impact of mHealth Interventions: Systematic Review of Systematic   Reviews
https://mhealth.jmir.org/2018/1/e23/

Personal Health Record
Personal Health Records: A systematic literature review
https://www.jmir.org/2017/1/e13/

Behavior Informatics
Behavioral Health Information Technology: From Chaos To Clarity
https://www.healthaffairs.org/doi/pdf/10.1377/hlthaff.2016.0013

Electronic Data Collection
"Community vital signs" **: incorporating geocoded social determinants into electronic records to promote patient and population health**
https://academic.oup.com/jamia/article/23/2/407/2572403

Population based Surveillance

Monitoring Californians' Mental Health: Population Surveillance Reveals Gender, Racial/Ethnic, Age, and Regional Disparities
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6557041/

Public Health dashboards

A Human-Centered Platform for HIV Infection Reduction in New York: Development and Usage Analysis of the Ending the Epidemic (ETE) Dashboard

https://publichealth.jmir.org/2017/4/e95/

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Subject Code	PHI208	Subject Title	Principles of Demography						
LTP	4:0:0	**Credit**	4	**Subject Category**	Elective	**Year**	1st	**Semester**	I

Course Outline: This course is designed to provide graduate students and health professionals with an understanding of the principles and methods of Demography. Demography envisions the ever dynamic trends of populations in global scenario. Demographic studies influence and help varied multidisciplinary researcher's viz., economists, policy planners, geographers and even public health professionals. Parameters used to study Demography mainly include Fertility, Mortality, and Morbidity and Migration changes in the population. This class will focus on principals of demography and population studies and its applications across various disciplines. Students will understand importance of demography; and techniques used. Students will be able to evaluate fertility, mortality and migration statistics and their application. Students will also learn how to assess the role of various national and global health policies relevant to demographic changes.

Course Objective:

- Nature and scope of Demography
- Basic concepts of demographic analysis: Terminology, Rates and Ratios
- Techniques of data collection
- Sources of population data
- Demographic theories
- Significance of fertility statistics and their application
- Public health perspective of Fertility studies and population explosion
- Trends and determinants of mortality and morbidity
- Role and application of demography in public health
- Critical review of health policies in India
- Migration patterns and trends
- Various national and global health policies relevant to demographic changes

Course Pre/Co- requisite (if any): Nil

Detailed Syllabus

UNIT 1 Introduction to Demography (4.5 Hrs)

UNIT 2   Demographic theories   (4.5 Hrs)

UNIT 3   Data Collection Methods   (4.5 Hrs)

UNIT 4   Significance of Fertility Statistics and their application   (4.5 Hrs)

UNIT 5   Family Planning   (4.5 Hrs)

UNIT 6   Trends and Determinants of Mortality   (4.5 Hrs

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UNIT 7   **Morbidity**   **(4.5 Hrs)**

UNIT 8   **Role and Application of Demography in Public Health**   **(4.5 Hrs)**

UNIT 9   **Migration patterns and trends**   **(4.5 Hrs)**

UNIT 10   **Various national and global health policies relevant to**   **(4.5 Hrs)**

               demographic changes

Learning Outcome

1. Understand and apply the basic concepts, theories and measures of Demography.
2. Identify and analyze demographic data.
3. Comprehend significance of demography in public health.
4. Interpret fertility, mortality, morbidity and migration patterns and their effect on composition, structure and growth of population in India.
5. Understand the population policies at global and national level.
6. Review and interpret relevant literature.

Text book [TB]:

The Methods and Materials of Demography, by Jacob S. Siegel, David A. Swanson

Reference books [RB]:

Concepts, Methods and Practical Applications in Applied Demography: An Introductory Textbook, by Richard K. Thomas

Reference Material

Introduction to Demography
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2811102/pdf/1472-6947-9-51.pdf

https://bmcmedinformdecismak.biomedcentral.com/articles/10.1186/s12911-020-1059-6

https://journals.sagepub.com/doi/pdf/10.1177/2050157912464492

Theories of Demography

https://mpra.ub.uni-muenchen.de/24922/1/MPRA_paper_24922.pdf

https://www.un.org/en/development/desa/population/events/pdf/expert/4/dyson.pdf

Data collection methods

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4794301/pdf/BLT.15.158493.pdf

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6366271/

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Fertility and its determinants

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5624987/pdf/13524_2017_Article_612.pdf

http://downloads.hindawi.com/archive/2014/940509.pdf

Family planning

https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(17)33104-5/fulltext#seccestitle10

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4714507/

Trends and determinants of mortality

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3042727/

Morbidity

https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(19)30451-6/fulltext

Significance of Demography in Public health

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3743306/

Migration trends

https://madridge.org/journal-of-behavioral-and-social-sciences/mjbss-1000104.pdf

Population Policy

https://www.researchgate.net/publication/318437078_World_Population_Policies_Their_Origin_Evolution_and_Impact_by_John_F_May

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Subject Code	MB901	Subject Title	Research Methodology							
LTP	4:0:0	Credit	4	Subject Category	Core	Year	1st	Semester	I	

Course Outline:

This course is designed to provide students and health professionals with an understanding of the objectives and methods of research in public health. Students will acquire the skills to critique research designs and will design their own study in an area of public health.

Course Objective:

- Understand the usefulness of research design in public health research
- Understand the components and types of research designs
- Apply research designs to relevant research questions
- Critically appraise the design, methods, and results of published research

Course Pre/Co- requisite (if any): Nil

Detailed Syllabus

UNIT 1	**Introduction to Research Methodology**	**(6 Hr)**
UNIT 2	**Components of Research Methodology**	**(6 Hr)**
UNIT 3	**Designs**	**(6 Hr)**
UNIT 4	**Formulating a research design, testing the hypothesis, sampling**	**(6 Hr)**
UNIT 5	**Data Collection**	**(6 Hr)**
UNIT 6	**Data Analysis and Interpretation**	**(6 Hr)**
UNIT 7	**Quality Appraisal, Strengths and Limitations**	**(6 Hr)**

Learning Outcome

Students will be able to

- Understand the components and types of research designs
- Understand the utility of research design in public health research
- Apply research designs to relevant research questions
- Critically appraise the design, methods and results of published research

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Text book [TB]:

- Creswell JW. A Concise Introduction to Mixed Methods Research

Reference books [RB]:

- Creswell JW, Clark V. 2018. Designing and conducting mixed methods research (3rd ed.). Thousand Oaks: Sage.

Reference Material

Lecture 1

Reading List

Additional resources:

Researching Health: Qualitative, Quantitative and Mixed Methods

edited by Mike Saks, Judith Allsop

https://books.google.ca/books?hl=en&lr=&id=-uGXfzbqAmMC&oi=fnd&pg=PP1&dq=info:CLix5ieliCgJ:scholar.google.com/&ots=iYacODex8b&sig=QajsG845FJw4whY4XtMGUr6_xUg&redir_esc=y

Research Design: **Quantitative, Qualitative, Mixed Methods, Arts-Based, and Community-Based Participatory Research Approaches. Patricia Leavy**

https://books.google.ca/books?hl=en&lr=&id=hxyDDgAAQBAJ&oi=fnd&pg=PP1&dq=info:I2xVQ2tP_JkJ:scholar.google.com/&ots=T4bY-Yqae4&sig=gAsHFHn5njLHiaEEGhCPU3AUWzk&redir_esc=y#v=onepage&q&f=false

Mixed-Methods Research. Tomorrow's research

https://tomprof.stanford.edu/posting/1554

Judith Schoonenboom and R. Burke Johnson. How to Construct a Mixed Methods Research Design

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5602001/

Lecture 2

Stephenson JM; Babiker A. Overview of study design in clinical epidemiology. Sex Transm Inf 2000;76:244–247.

https://sti.bmj.com/content/76/4/244

Cristancho, S. M., Goldszmidt, M., Lingard, L., & Watling, C. (2018). Qualitative research essentials for medical education. *Singapore medical journal*, *59*(12), 622–627.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6301871/

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Martins SB, Zin A, Zin W. Study design

http://eknygos.lsmuni.lt/springer/26/Part%2011/719-747.pdf

Lecture 3

Schoonenboom, J., & Johnson, R. B. (2017). How to Construct a Mixed Methods Research Design. *KolnerZeitschrift fur Soziologie und Sozialpsychologie*, *69*(Suppl 2), 107–131.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5602001/

Choosing a mixed methods design. (Book chapter) Creswell. Sage Publications.

https://www.sagepub.com/sites/default/files/upm-binaries/10982_Chapter_4.pdf

Integrating quantitative and qualitative data in mixed methods research.
http://www.scielo.br/pdf/tce/v26n3/en_0104-0707-tce-26-03-e1590016.pdf

Lecture 4

Ratan, S. K., Anand, T., & Ratan, J. (2019). Formulation of Research Question - Stepwise Approach. *Journal of Indian Association of Pediatric Surgeons*, *24*(1), 15–20.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6322175/

Schoonenboom, J., & Johnson, R. B. (2017). How to Construct a Mixed Methods Research Design. *KolnerZeitschrift fur Soziologie und Sozialpsychologie*, *69*(Suppl 2), 107–131.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5602001/

John Creswell. CHOOSING A MIXED METHODS DESIGN

https://www.sagepub.com/sites/default/files/upm-binaries/10982_Chapter_]4.pdf

Lecture 5

Roberta Heale, Alison Twycross. Validity and reliability in quantitative studies. Evid Based Nurs. 2015 . 18 (3) 66-67.

https://ebn.bmj.com/content/ebnurs/18/3/66.full.pdf

National Science foundation. An overview of quantitative and qualitative data collection.

https://www.nsf.gov/pubs/2002/nsf02057/nsf02057_4.pdf

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DeJonckheere M, Vaughn LM. Fam Med Com Health 2019;7:e000057

https://fmch.bmj.com/content/7/2/e000057

CONDUCTING SEMI-STRUCTURED INTERVIEWS (OXFAM, UK)

https://oxfamilibrary.openrepository.com/bitstream/handle/10546/252993/ml-guideline-conducting-semistructured-interviews-221112-en.pdf?sequence=13

Kruege RA. Designing and Conducting Focus Group Interviews

https://www.eiu.edu/ihec/Krueger-FocusGroupInterviews.pdf

Rosanna L. Breen (2006) A Practical Guide to Focus-Group Research, Journal of Geography in Higher Education, 30:3, 463-475.

https://www.tandfonline.com/doi/pdf/10.1080/03098260600927575

Lecture 6

Daniel K. Schneider, TECFA, University of Geneva. Quantitative Data Analysis

https://tecfa.unige.ch/guides/methodo/edu-tech/slides/analysis-quant.pdf

Sutton J, Austin Z. Qualitative Research: Data Collection, Analysis, and Management. Can J Hosp Pharm. 2015 May-Jun; 68(3): 226–231

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4485510/

 Ranney ML , Meisel Z, Choo EK , Garro A , Sasson C, and Morrow K. . Interview-Based Qualitative Research in Emergency Care Part II: Data Collection, Analysis and Results Reporting. AcadEmerg Med. 2015 22(9): 1103–1112

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4560670

Simpson S H. Creating a Data Analysis Plan: What to Consider When Choosing Statistics for a Study. *The Canadian journal of hospital pharmacy*, *68*(4), 311–317.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4552232/

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Lecture 7

Department of Family Medicine. McGill University. Mixed Methods Appraisal tool (MMAT) VERSION 2018 User guide

http://mixedmethodsappraisaltoolpublic.pbworks.com/w/file/fetch/127916259/MMAT_2018_criteria-manual_2018-08-01_ENG.pdf

Heyvaert, M., Hannes, K., Maes, B., &Onghena, P. (2013). Critical Appraisal of Mixed Methods Studies. *Journal of Mixed Methods Research*, *7*(4), 302–327

Pre Ph.D. (Pharmacy- PHI)

Subject Code		Subject Title	Research Seminar						
LTP	1:0:0	**Credit**	1	**Subject Category**	Core	**Year**	1st	**Semester**	I

Course Objective:

- o Explain and apply principles of population health informatics to the final project proposed.
- o Analyze the case studies discussed during the guest lectures.
- o Demonstrate skills in developing a population health informatics project.

Course Pre/Co- requisite (if any): Nil

Schedule of Research Seminar
Attachment in excel

Learning Outcome

- Understanding of the application of principles of population health informatics to the final project proposed.
- Ability to analyze the case studies
- Skills required for developing a population health informatics project.

Text book [TB]:

Population Health Informatics: "Driving evidence based solutions into Practice"by Ashish Joshi
https://www.jblearning.com/catalog/productdetails/9781284103960

Reference books [RB]:

Public Health Informatics and Information Systems 2nd Edition by J.A.Magnuson, Paul C.Fu.Jr

Approved by the Board of Governors