School of Health Professions
Physical Therapy Program

Course Syllabus

Course Information:

<table>
<thead>
<tr>
<th>Semester/Year</th>
<th>Fall 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Name</td>
<td>Research Methods</td>
</tr>
<tr>
<td>Course Prefix/Number/Section</td>
<td>PHTH 551</td>
</tr>
<tr>
<td>Course Location</td>
<td>ABAC 3245</td>
</tr>
<tr>
<td>Course Meeting Days/Times</td>
<td>Tuesday and Thursday 1:40 pm- 2:55 pm</td>
</tr>
<tr>
<td>Clinical Experience, Internship, Fieldwork</td>
<td>N/A</td>
</tr>
<tr>
<td>Credit Hours</td>
<td>3</td>
</tr>
<tr>
<td>Prerequisites</td>
<td>PSYC 341, PHTH 515, 522, 529, and 531</td>
</tr>
<tr>
<td>Course type (DAY/WEC, Graduate) Graduate)</td>
<td>DAY, Graduate</td>
</tr>
</tbody>
</table>

Instructor Information:

<table>
<thead>
<tr>
<th>Instructor</th>
<th>Sandy Ross, PT, DPT, MHS, PCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office Location</td>
<td>ABAC 1257</td>
</tr>
<tr>
<td>Office Hours</td>
<td>Office hours posted on door</td>
</tr>
<tr>
<td>Office Phone Number</td>
<td>314-529-9513</td>
</tr>
<tr>
<td>Alternate Phone Number</td>
<td>636-861-1984 (home)</td>
</tr>
<tr>
<td>E-mail address</td>
<td><a href="mailto:sross@maryville.edu">sross@maryville.edu</a></td>
</tr>
</tbody>
</table>

Course Catalog Description/ Course Purpose and Goals

This course's purpose is to enable students to assess the credibility and applicability of research results. Emphasis is placed on presenting principles of research design and statistical methods which will enhance their ability to review professional literature critically, and to develop a research proposal or systematic review of the literature.

Physical Therapy Program Curriculum Goals

Generalist Clinicians who will provide safe, caring physical therapy services in a diversity of settings for all ages and conditions of individuals.

Learners who will seek to improve their ability to provide physical therapy services through ongoing evaluation and expansion of their knowledge and skills.

Reflective Practitioners who will critically evaluate and improve the effectiveness of their practice in the light of personal experience and changing information derived from research.
Student Learning Outcomes
See attached unit sheets for specific objectives, assigned readings and prerequisites.

Textbooks/ Required Readings

Required


Instructional Methods and Student Activities

Lecture and discussion methods will be used. Students will critically analyze literature, run mock statistical analysis and begin to formulate group research projects.

Course Requirements and Points/ Weighting

<table>
<thead>
<tr>
<th>Course requirement</th>
<th>Points/ Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quizzes 16 @ 5 points each</td>
<td>80</td>
</tr>
<tr>
<td>Review article 1st time</td>
<td>5</td>
</tr>
<tr>
<td>Abstract review</td>
<td>10</td>
</tr>
<tr>
<td>IRB certificate</td>
<td>15</td>
</tr>
<tr>
<td>Debate</td>
<td>25</td>
</tr>
<tr>
<td>Mock stats</td>
<td>15</td>
</tr>
<tr>
<td>PICO question</td>
<td>10</td>
</tr>
<tr>
<td>Review article 2nd time</td>
<td>30</td>
</tr>
<tr>
<td>General research project plan</td>
<td>15</td>
</tr>
<tr>
<td>Class presentation</td>
<td>30</td>
</tr>
<tr>
<td>Preliminary report</td>
<td>70</td>
</tr>
<tr>
<td>Professional behavior</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td>325</td>
</tr>
</tbody>
</table>

Grading Scale

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>93 - 100</td>
<td>A</td>
</tr>
<tr>
<td>90 - 92.9</td>
<td>A-</td>
</tr>
<tr>
<td>86 - 89.9</td>
<td>B+</td>
</tr>
</tbody>
</table>
83 - 85.9 = B
80 - 82.9 = B-
77 - 79.9 = C+
74 - 76.9 = C
70 - 73.9 = C-
Below 70 = D
Below 60 = F

**Attendance Policy**

It is expected that students attend each class for the full time period. In the event that an absence must occur, the student must notify the instructor prior to the class time. See the University catalog for a description of the class attendance policy.

**Inclement Weather**

**Sign Up for Saints Alert:** To be notified when the university is closed, join Maryville’s Saints Alert System by registering at [http://intranet.maryville.edu/Public Safety/alert.asp](http://intranet.maryville.edu/Public Safety/alert.asp). This service allows students, faculty and staff to “opt in” to be notified via text message in the event of an emergency or campus closure. The message can also be sent to a designated e-mail address, PDA or pager.

Whenever the weather seems inclement, consult your Canvas course site. The instructor will determine if the class will meet or will have specific information on class assignments to be completed in lieu of meeting face to face. To find out if the university is closed due to inclement weather, students should check the Maryville University website ([www.maryville.edu](http://www.maryville.edu)), television stations KTVI FOX, KMOX or KSDK, or radio station KMOX 1120 AM for notifications regarding university closings or snow schedule.

**Participation and Professional Behavior**

According to the American Physical Therapy Association, physical therapists consistently demonstrate core values by aspiring to and wisely applying principles of altruism, excellence, caring, ethics, respect, communication, civility, accountability, and by working together with other professionals to achieve optimal health and wellness in individuals and communities. Professionalism is a key element of the American Physical Therapy Association’s vision.

Maryville University physical therapy students are expected to display professional behavior both in and outside of the classroom. Professional behavior includes, but is not limited to, confidentiality, appropriate dress, attendance, punctuality, active participation in classroom, laboratory, and online activities, appropriate communication (verbal, nonverbal, and written), initiative, preparation for classes, appropriate and respectful interaction with others, and professional responsibility (meeting deadlines for assignments, contacting the instructor if ill, etc.). Due to the hands-on learning in laboratory classes, students must respect their classmates’ privacy and personal boundaries.
**General Course Policies**

August 29, 2014 – Add/Drop period ends at 5:00 p.m. for day/evening courses (no more changes to registration).

November 7, 2014 – Last day to withdraw. After this date students will receive the letter grade earned in the class. Pass/No Pass grading changes for full semester classes must occur prior to this session.

**In Class Technology Policy**

Personal electronics (e.g., laptops, iPads, cell phones) can be used to enhance learning and instruction in a variety of ways, but during class time they should be used only for class-related activities. Texting and the use of other electronic devices for non-class-related activities should be reserved for class break times. Additionally, with permission of the instructor, audio and/or video recordings may be used for your individual learning, but cannot be distributed to others without the instructor’s permission.

**Technology Proficiency Requirements and Resources**

In order to be successful in the course, you are expected to:
- Have access to a computer with an internet connection. DSL or Cable connections are preferred, but dial-up is acceptable
- Have basic web search and browsing skills (know what browser you are using, understand how to open and close new browser windows or tabs, understand how to override pop-up blockers)
- Have basic file management skills (create/locate/delete/move a file or folder on your computer)
- Understand different file formats (.doc, .docx, .pages, .wps, etc.) and be able to follow instructions on the type of file preferred by your instructor for the course
- Search for and obtain articles from online databases, the university library and inter-library loan
- Check your Maryville email at least daily
- Be able to use Microsoft Office, iWork (Mac) or Open Office software to create documents, spreadsheets or presentations, edit them, save them, convert them to other formats as needed, print them and email them as attachments or upload them to Canvas.
- Check Canvas course site at least daily
- Follow the instructor’s guidance on the use of Canvas tools

If you have questions on course-related issues, please contact your instructor first. If you have problem accessing Canvas, please contact the Help Desk at (314) 529-9506 or helpdesk@maryville.edu

**Academic Honesty and Integrity**

Students are to adhere to the Student Code of Conduct as outlined in the Maryville University Student Handbook. Specifically, in regards to this course, students are expected to be honest, to complete their own work, to respect the work of others and to acknowledge information received from other sources.
Additionally, students are bound by the Code of Ethics of the American Physical Therapy Association and are expected to act in a manner that upholds the ethical principles of this organization.

Course/Instructor Evaluation (OLE')

Maryville University values feedback from students as part of its ongoing quest for excellence in education. As part of this process, you will have the opportunity to evaluate this course and provide the instructor with feedback and comments through the use of a standard evaluation instrument. Commitment to the teaching and learning process requires each student to complete this evaluation as part of the ongoing revision of this course and instructional competence. Your participation in this process is an expectation of this course.

Informed Consent

Some courses in this curriculum require students to actively participate as a subject or model for demonstration and practice. Should this course have such a requirement, your informed consent should be signed, current and on file in your respective program OR is attached to this syllabus for your signature.

Academic Support

The Center for Academic Success and First-Year Experience provides assistance and support for all students. Services include peer tutoring, individual consultation to assist students with achieving their academic goals, study skills materials, Writing Studio, and accommodations for students with documented disabilities. Academic Success services are located on the main floor of the University Library. Writing and math tutors are also available for BYOH (Bring Your Own Homework) Sunday through Wednesdays from 6:30-8:30p.m. and Saturdays from 11:00 a.m.-2:00 p.m. Call 314-529-9228 or email peertutors@maryville.edu for more information. We provide accommodations and supports for students with documented disabilities as defined by the Americans with Disabilities Act. If you have a documented disability and wish to discuss academic accommodations, please contact the Center for Academic Success & First-Year Experience at 314.529.9374 as soon as possible.

This syllabus is subject to change at the discretion of the instructor to accommodate instructional and/ or student needs.

Course Outline / Schedule (See attached)

RESEARCH ASSIGNMENT

- Students working in a group will develop a research proposal/pilot or systematic review to be presented in the Spring 2016.
- The group members are to be identified by September 12. (8 groups of 5)
- The general research assignment is to be identified by November 14. Each group is to meet with the course instructor to discuss their ideas and preliminary literature review. The type of research, systematic review of the literature or a proposal/pilot, preliminary ideas on variables and literature is to be identified by end of this discussion. (15 points)
Each group will be assigned a faculty advisor based on the topic or type of research selected and interest in faculty research.

Each group will present (30 points) their initial work and submit a preliminary report (70 points) on their research on Dec 3. (30 points)

The Preliminary report should include the following:

**For both systematic reviews and research pilots:**
- Working title
- Statement of the research question
- Rationale and justification for the review/study = Background (lit review at least 3 relevant articles)
- Proposed study design, inclusion and exclusion criteria
- Significance of the review/study to physical therapy

**For those completing a Systematic Review include:**
- Initial ideas for the development of a review protocol
- Identify databases
- Identify key terms for search
- Set inclusion and exclusion criteria
- Identify types of study scoring you will use (Sackett’s Level, PEDro?)
- Identify what information should be included in the articles such as types of patients, outcome measures used (will there be studies with the same outcome measures so the results can be compiled?)
- Timeframe for independent article reviews, how to determine quality, who breaks a tie and data analysis.

**For those completing a Research Pilot also include:**
- Resources
- Establish specific aims
- Background and Significance: Literature section related to the proposed theory and supportive rationale, previous studies
- In outline of methods include independent and dependent variables, determine types of participants, procedures (if intervention), outcome measurers used and data analysis
### COURSE SCHEDULE

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Chps.</th>
</tr>
</thead>
<tbody>
<tr>
<td>08-26</td>
<td>Introduction to course, timelines for research</td>
<td>1, 2</td>
</tr>
<tr>
<td></td>
<td>Rehabilitation Research</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Theory in Rehabilitation Research</td>
<td></td>
</tr>
<tr>
<td>08-28</td>
<td><strong>Quiz</strong>/Evidence-Based Practice</td>
<td>3, 4</td>
</tr>
<tr>
<td></td>
<td>Finding Research Literature</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Paraphrasing, quotation, citation, plagiarism</td>
<td></td>
</tr>
<tr>
<td>09-02</td>
<td><strong>Quiz</strong>/Research Paradigms</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Review an article: How well was the study conducted?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Are the results believable?</td>
<td></td>
</tr>
<tr>
<td>09-04</td>
<td><strong>Quiz</strong>/Variables</td>
<td>7, 8</td>
</tr>
<tr>
<td></td>
<td>Research Validity</td>
<td></td>
</tr>
<tr>
<td>09-09</td>
<td><strong>Quiz</strong>/Selection and Assignment of Participants</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td><strong>Article review due</strong></td>
<td></td>
</tr>
<tr>
<td>09-11</td>
<td><strong>Quiz</strong>/Group Designs</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td><strong>Groups due</strong> (8 groups of 5)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Abstract review</td>
<td></td>
</tr>
<tr>
<td>09-16</td>
<td>Maryville Reaches Out – no class</td>
<td></td>
</tr>
<tr>
<td>09-18</td>
<td><strong>Quiz</strong>/Single-subject Design</td>
<td>11, 12</td>
</tr>
<tr>
<td></td>
<td>Nonexperimental Research</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Abstract review due</strong></td>
<td></td>
</tr>
<tr>
<td>09-23</td>
<td><strong>Quiz</strong>/Clinical Case Reports</td>
<td>13, 14</td>
</tr>
<tr>
<td></td>
<td>Qualitative Research</td>
<td></td>
</tr>
<tr>
<td>09-25</td>
<td><strong>Quiz</strong>/Outcomes Research</td>
<td>16, 17</td>
</tr>
<tr>
<td></td>
<td>Survey Research</td>
<td></td>
</tr>
<tr>
<td>09-30</td>
<td><strong>Quiz</strong>/Measurement Theory</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td><strong>Research Advisors assigned</strong></td>
<td></td>
</tr>
<tr>
<td>10-02</td>
<td><strong>Quiz</strong>/Methodological Research</td>
<td>19</td>
</tr>
<tr>
<td>10-07</td>
<td><strong>Debate</strong> The Immortal Life of Henrietta Lacks – Rounds 1 &amp; 2</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Suggested reading for debate and IRB certificate</td>
<td></td>
</tr>
<tr>
<td>10-09</td>
<td><strong>Debate</strong> – Round 3</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td><strong>Quiz</strong>/Statistical Reasoning</td>
<td></td>
</tr>
<tr>
<td>10-14</td>
<td><strong>Quiz</strong>/Analysis of Differences: Basic and Advanced</td>
<td>21, 22, 23, 24</td>
</tr>
<tr>
<td></td>
<td>Analysis of Relationships: Basic and Advanced</td>
<td></td>
</tr>
</tbody>
</table>
10-16  Statistical examples  
    t-test  
    Mann-Whitney  
    ANOVA  
    Correlation – Pearson r  
    ICC

10-22  8:00-9:15 ** Stats Lab (Computer lab R1334)

10-23  Quiz/Evaluating Evidence One Article at a Time  
       IRB certification due

10-29  8:00-9:15 ** Stats Lab (Computer lab R1334)

10-30  Quiz/Synthesizing Bodies of Evidence  
       Systematic Reviews (Read article)

11-05  8:00-9:15 ** Developing a PICO question /Literature Search  
       (Computer lab R1334) Mock statistics assignment due (SPSS stats sheets, output with interpretations and conclusion statement)

11-06  Quiz/Implementing a Research Project  
       Research Proposal/Pilots (review previous pilot)

11-13  10:50-12:05** Quiz/Epidemiology (Mike Cibulka guest lecturer)  
       Simon 134 PT lab  
       Turn in PICO question

11-13  Review due on article  
       Group meetings with instructor

11-18  Work on research and preliminary plan

11-20  Work on research and preliminary plan

11-25 – 11-27  Thanksgiving Break!

12-02  1:40 – 5:00** Presentation of initial research  
       Research preliminary report is due (Follow guidelines in syllabus)

12-04  No class

12-09  Publishing and Presenting Research

12-11  Review paper, poster grading forms
Credit Hour Identification

The following table summarizes the minimum clock hour estimates for this course in compliance with Maryville University credit hour policy and Federal Guidelines (34 CFR Section 668.8).

**Note:** The hours presented in the table below provide estimates for the average time required for completion of course components. Students may require additional time to successfully master topics, complete projects or to comprehend required readings. Completing the times listed below does not guarantee a specific level of success in the course.

<table>
<thead>
<tr>
<th>Hours of Instruction ¹</th>
<th>Clock Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom</td>
<td>45</td>
</tr>
<tr>
<td>Labs</td>
<td></td>
</tr>
<tr>
<td>Studio</td>
<td></td>
</tr>
<tr>
<td>Field Experience (Clinical, Practicum)</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hours of Student Work Outside of Class ²</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Required Discussions/Conferences/Field</td>
<td></td>
</tr>
<tr>
<td>Classroom Preparation</td>
<td>60</td>
</tr>
<tr>
<td>(Readings/Practice/Assignments/Tutorials/Problems)</td>
<td></td>
</tr>
<tr>
<td>Quiz Study, Exam Study and Take Home Exams</td>
<td>15</td>
</tr>
<tr>
<td>Projects (Research/Papers/Presentations)</td>
<td>25</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>145</td>
</tr>
</tbody>
</table>

Minimum requirements for 1 credit hour are defined as 15 hours of in-class instruction accompanying a minimum of 30 hours of out-of-class preparation. An equivalent amount of work may substitute the 15 in-class and 30 out-of-class minimum hours for other academic activities as established by the institution (this could include laboratories, studio work, practica, clinicals or other academic work leading to the award of credit hours). Hours listed may exceed minimum requirements.

² 30 hours of out-of-class preparation per 1 credit hour is typical. Courses that deviate from this minimum due to particular pedagogical needs must meet the equivalent work requirement as specified in note 1 above. Hours listed may exceed minimum requirements.
MARYVILLE UNIVERSITY PHYSICAL THERAPY PROGRAM

<table>
<thead>
<tr>
<th>Course Number and Name:</th>
<th>PHTH 551 Research Methods</th>
<th>Instructor:</th>
<th>Sandy A. Ross, PT, DPT, MHS, PCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit Name:</td>
<td>Intro to research and types of research</td>
<td>Semester/Year:</td>
<td>Fall Semester 2014</td>
</tr>
</tbody>
</table>

UNIT OBJECTIVES:
Upon successful completion of this unit the student will be able to compare and contrast types of research by:

1. Discuss the definitions of research, reasons for developing rehabilitation research, barriers to research and status of the APTA and research.
2. Describing the relationships among theory, research and practice.
4. Determining how to develop an answerable research question.
5. Describing the criteria for evaluating research problems.
6. Distinguishing between qualitative, quantitative and single-system research paradigms.
7. Describing the methods used for qualitative and quantitative research.
8. Distinguishing different types of quantitative research such as experimental, quasi-experimental.
9. Distinguishing independent from dependent variables and controlling variables.
10. Determine the reliability and validity issues in a research article.
11. Identify the means used to insure reliability and validity in a research article.
12. Evaluate the effectiveness of the means used to insure reliability and validity.

ASSIGNMENTS:

Review an abstract together.
Turn in an additional abstract review.

IN-CLASS ACTIVITIES:
Discussion

PREREQUISITES
UNIT OBJECTIVES:
Upon successful completion of this unit the student will be able to:
   1. Debate the rights and dignity of research subjects and fellow researchers
   2. Describe the responsibility of researchers to conduct research in an ethical manner
   3. Describe the elements of informed consent.
   4. Determine from a research article that the research was conducted in an ethical manner.
   5. Explain the purpose of the Institutional Review Board (IRB).
   6. Demonstrate achievement of IRB certification.
   7. Describe the significance of sampling and assigning subjects to groups.
   8. Differentiate between randomized controlled trials, single-factor, multiple-factor experimental and single-subject designs.

ASSIGNMENTS:
   Debate The Immortal Life of Henrietta Lacks

IN-CLASS ACTIVITIES:
   Discussion
   Review IRB documents and procedures.

PREREQUISITES
UNIT OBJECTIVES:
Upon successful completion of this unit the student will be able to:
1. Compare and contrast typically used statistical tools.
2. Describe types of data indicating appropriate uses
3. Describe descriptive statistics indicating appropriate uses
4. Describe inferential statistics indicating appropriate uses
5. Explain how confidence intervals are used
6. Describe probability and sampling error
7. Apply statistical analysis to resolve a research question

ASSIGNMENTS:
Run explore, a simple paired, unpaired t-test and one-way anova on mock data.

IN-CLASS ACTIVITIES:
    Discussion
    Review of Articles

PREREQUISITES:
Ability to calculate mean, median, mode, find p and z values, interpret results of statistical tests.
UNIT OBJECTIVES:
Upon successful completion of this unit the student will be able to
1. Describe the following components of a research:
   - Statement of the problem
   - Measurement methods
   - Rationale and theoretical framework
   - Results
   - Operational definitions
   - References
   - Sample description and number
   - Review of the literature
   - Data analysis
   - Variables: independent and dependent
   - Implications
   - Population
   - Clinical relevance
   - Data collection methods
   - Specific purpose of hypothesis
   - Discussion and Conclusion
   - Design
2. Identify the above components in a research article and perform a thorough article review.
3. Compare different ways to synthesize the literature including; narrative reviews, systematic reviews and meta-analysis.
4. Perform a literature review based on a written PICO question.

ASSIGNMENTS:
PICO assignment

IN-CLASS ACTIVITIES:
   - Discussion
   - Review of Articles

PREREQUISITES:
From previous courses student has knowledge of: how to conduct a review of literature, hypothesis and null hypothesis, variables, and population and sample.
UNIT OBJECTIVES:
Upon successful completion of this unit the student will be able to:
1. Correctly use the AMA format when writing papers
2. Identify sample of AMA form and style when reviewing research articles.

ASSIGNMENTS:
Please review AMA style of referencing in the Physical Therapy Journal.

IN-CLASS ACTIVITIES:
Discussion
Review articles

PREREQUISITES:
MARYVILLE UNIVERSITY PHYSICAL THERAPY PROGRAM

<table>
<thead>
<tr>
<th>Course Number and Name:</th>
<th>PHTH 551 Research Methods</th>
<th>Instructor:</th>
<th>Sandy A. Ross, PT, DPT, MHS, PCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit Name:</td>
<td>Develop a Research Project</td>
<td>Semester/Year:</td>
<td>Fall Semester 2014</td>
</tr>
</tbody>
</table>

UNIT OBJECTIVES:
Upon successful completion of this unit the student will be able to:
1. Develop a proposal for research
2. Participate in a clinically-oriented research proposal or systematic review
   a. Identify clinically relevant questions which is of current concern in physical therapy
   b. Conduct a search of the literature relevant to the identified questions
   c. Communicate with faculty and clinicians in the process of identifying and clarifying the questions
   d. Focus a set of potential question into one question feasible to research
   e. Select data collection protocols and methods relevant to the question
   f. Select data analysis protocols based on the data collection methods and the nature of the research.
3. Use group learning and decision-making skills in the process of developing the research.
4. Identify potential local, regional and national resources for research funding, time, personnel, facilities and equipment relevant to the selected research.

ASSIGNMENTS:
IN-CLASS ACTIVITIES:
   Discussion
   Presentation of preliminary research.

PREREQUISITES:
UNIT OBJECTIVES:
Upon successful completion of this unit the student will be able to:
   1. Describe the contents of a research article.
   2. Describe at least three different modes of sharing research results.

ASSIGNMENTS:
Share preliminary research plan

IN-CLASS ACTIVITIES:
   Discussion

PREREQUISITES: