COURSE TITLE: Independent Research Study for Sue Bedair (IRS)  COURSE #: EL6521

TIME REQUIREMENT:  Lecture / mentoring: 3 (hrs/week)
                   Mondays 4p-5:30p at the SPC LRC
                   Additional as needed via face to face, email, or phone calls
Laboratory/ research activity: 15
Total Course Hours: 45 Course Units: 3

PREREQUISITES:    * Tri 3 and research experience or Completion of Phase 1
                   * Approval of instructor / mentor

COMPETENCIES GUIDING THE COURSE:

1. Medical Knowledge
2. Patient Care
3. Professionalism
4. Interpersonal Communication Skills

GENERAL COURSE DESCRIPTION:

This class is an interactive course designed to sharpen the students’ research literacy and evidence based practice (EBP) skills as well as basic research skills. The overall objective of this course is to expose students to research, provide a research experience and create sound research and EBP habits in students preparing to become physicians within an environment of scientific inquiry and sound lifelong learning. Students will be involved in “active research,” including (but not limited to) activities such as reviewing literature, synthesizing literature into “best evidence” and systematic review formats, designing studies, running experiments, delivering interventions, surveys or questionnaires, collecting and analyzing data, writing up findings, and publishing or presenting observations, results and analysis.

Applied EBP and research skills will be emphasized, including questioning, researching, analyzing and communicating clinically and scientifically relevant information. The course has two components: 1) an initial clinical inquiry defining the research or clinical topic or patient case, asking an appropriate clinical question, accessing and appraising the available research and evidence, defining and communicating findings and an overall assessment of the clinical impact and knowledge gaps; 2) a cycle of research inquiry, study and project design, data collection, analysis, interpretation and communication. Effort may include research-related service activities (organizing professional meetings, peer-review of research articles and grant proposals, service on compliance committees and panels etc.). Depending on the credit hours agreed upon before the course begins (prior to course registration and with specific instructor or mentor approval), all or part of the overall course will be accomplished.

For IRS electives involving planning and communicating a case report or performing a case study, course credit will be given for the effort and activity outlined in the syllabus / project plan. Full credit may not necessarily be contingent on publication; although credit will be given based on the level of professionalism with which the project is completed.

This course may be taken multiple times if the project or study is involved or requires long term participation. A student may also take the IRS elective multiple times, focusing on different activities, projects or studies. The course may only be taken with instructor / mentor approval.
COURSE OBJECTIVES FOR LITERATURE SYNTHESIS:

The course objectives listed are specific for a literature synthesis and a continuation of last trimester’s work. Additional course work will involve learning and applying survey research methodology.

Upon completion of this course, the successful student will be able to:

1. Demonstrate the ability to ask a clinical question based on a clinical case or patient scenario to utilize in searching the medical literature including: 1) the Patient issue, population and disease of interest; 2) the Intervention of interest (treatment, diagnostic, prognosis, etiology/harm); 3) the best available Comparison if appropriate; 4) the desired clinical Outcome (PICO).
2. Demonstrate the ability to efficiently and effectively search the available medical literature utilizing online databases and appropriate search engines of both allopathic and complimentary/alternative medical literature and access and acquire the full text.
3. Successfully identify and evaluate specific literature related to a topic of clinical uncertainty and demonstrate a level of understanding that permits the student to confidently critically appraise and present the literature to a group of peers and to moderate discussion of the topic being presented.
4. Determine study purpose, objectives, specific aims, outcomes and tools or methods to measure outcomes validly.
5. Compile and organize results.
6. Communicate the scientific value and professional significance.
7. Structure the steps of the evidence synthesis process to produce the desired, valid, unbiased communication outcome
8. Assess the impact of the evidence and research outcomes on the clinical question, patient outcomes and the profession.
9. Present, discuss or publish the clinical and research findings.

COURSE OBJECTIVES FOR SURVEY RESEARCH
10. Identify primary sources of error in surveys, and discuss the consequences of each type of error for survey findings
11. Critically evaluate the design, construction and implications of studies based on survey research
12. Formulate strategies for surveys that minimize error
13. Critically evaluate the design, construction, and implications of surveys
INSTRUCTOR INFORMATION AND OFFICE HOURS:
Instructor:
Mabel Chang, DC, MPH
Assistant Professor, Clinical Studies
National University of Health Sciences
Caruth Health Education Center Annex

Office hours by appointment.

INSTRUCTIONAL MATERIAL (S):

Required CygNET registration and access:

Sullivan, BM. Pocius JD, Rizzo LA. CygNET Evidence Based Practice at NUHS and e-LRC (EBP@NUHS and e-LRC) National University of Health Science online modules for evidence based practice.

Chang, M. CygNET Independent Research Study.


Lectures are found here http://ocw.jhsph.edu/index.cfm/go/viewCourse/course/surveyresearchdesign/coursePage/lectureNotes/

Lectures are found here http://ocw.jhsph.edu/index.cfm/go/viewCourse/course/HSRE/coursePage/lectureNotes/


Required Reading Resources(s):


Other Recommend Instructional Material(s) and Resources: 31 Jan 2008. Available from URL :


The National Library of Medicine PubMed (database of biomedical research) www.pubmed.com free access to the biomedical databases of the National Library of Medicine including PubMed Medline, Books

EBSCOhost. EBSCO databases of biomedical research. http://search.ebscohost.com access to the NUHS subscribed databases of CAM focused biomedical literature, including full text.

www.cochrane.org The Cochrane Library is a collection of databases that contain high-quality independent evidence to inform healthcare decision making.

Riegleman RK. Studying a Study and Testing a Test How to Read the Medical Evidence. www.studyingastudy.com online biostatistical tutorial

Natural Standard databases. www.naturalstandard.com High quality, evidence-based information about complementary and alternative therapies. This international multidisciplinary collaboration now includes contributors from more than 100 eminent academic institutions.
**EVALUATION OF STUDENT'S ACHIEVEMENT:**

**Grading Procedure:**

Grades for overall scores (assuming other passing criteria are met) will be assigned as follows:

- 80% - 100% = P (Pass)
- <80% = F (Fail)

The College of Professional Studies' policy regarding attendance, effort, assignments and final examinations, as published in the most recent National University of Health Sciences Bulletin, will be followed.

**Missed or incomplete activity or assignments:**

A student who misses meeting times or effort and activity requirements must at least make up the time requirements, effort and meeting time at the discretion and scheduling of the instructor in order to receive a passing grade. The instructor has the right to close the course before the academic period (trimester, semester, etc) ends if the participant is significantly behind in effort, face-to-face meetings, activity requirements, assignments or deliverables, and assign a failing grade to the participant. The instructor and participant will make a schedule of activity and deliverables to which all instructors, mentors and participants will agree before the course may be enrolled.

The College of Professional Studies' policy regarding make-up final examinations and assignments, as published in the most recent National University of Health Sciences Bulletin, will be followed.

**Professional responsibility:**

The College of Professional Studies' policy on code of conduct, as published in the most recent National University of Health Science's Student Handbook, will be followed.

**Attendance Policy:**

All mentoring sessions and meetings with the “course instructor” are mandatory. If you cannot attend a session you must notify the instructor and make alternate arrangements. Failure to notify the instructor may result in a grade assignment of ‘unsatisfactory.’ Any make-up scheduling will be at the discretion of the instructor.

The instructor will track and report attendance and activity as required by the College of Professional Studies.

**DISABILITY SUPPORT SERVICES:**

Please refer to the most recently published National University of Health Sciences Student Handbook for further information regarding disability disclosure and support services.

**TEACHING METHODS, ACTIVITIES, GRADES AND ASSESSMENTS:**

Course outline, assignments are posted in CygNET. Access to CygNET, downloading, page views, uploading activity (even failed activity) can be and will be monitored via CygNET instructor resources.
COURSE OUTLINE (May be subject to change):

1) Clinical Inquiry: Define topic and question(s)
   a) Ask the clinical question – PICO.
   b) Specify the scientific professional merit (reason to be) and impact of the question, on CAM health practice, the CAM profession, the patient and public (public health).

2) Research Inquiry: Develop a research question to fill the knowledge gaps.
   a) Ask the research question, derived from the PICO-format clinical question.
   b) Develop an appropriate hypothesis and define the appropriate and desired outcome.
   c) Define and complete necessary training.
   d) Acquire Internal Review Board review and approval, including study design, methods, data collection and management and communication of results.
   e) If publishing, determine what journals are most appropriate, will have best audience for the information and evidence.
      i) Review Instructions to authors for specific journal.
      ii) Obtain all ethics and consent forms prior to initiating study.

3) Data Collection (literature):
   a) Pre-determine the grading system and inclusion and exclusion criteria. (Use of a published, validated grading system such as Cochrane, Natural Standard, PeDRO, the Centers for Evidence Based Medicine or a professional journal that publishes systematic reviews is advised).
   b) Structure the annotated bibliography, Best Evidence Table, Critically Appraised Topic (CAT) summary), systematic review or meta-analysis table. Define the format needed for communication and publishing.
   c) Access – search the existing research literature.

4) Analysis (literature)
   a) “JTASS” a limited, quick appraisal and analysis of retrieved citations.
   b) Determine if the state of the literature – the quality, quantity, specificity and applicability of the existing literature supports whether there is scientific and professional need for the study or documentation.
   c) Determine the quality and validity of the available literature – critically appraise the available research and evidence according to the Cochrane, Natural Standard, PeDRO or other specified, valid grading system. Grade the available research and evidence using the specified grading system.
   d) Summarize the selection and critical appraisals.

5) Apply & Assess:
   a) Synthesize the application and impact of the studies (citations) meeting both inclusion and exclusion criteria.
   b) Summarize and synthesize the application impact of selected, appraised and graded citations and studies, particularly with reference to the PICO and Research Question (RQ.)
   c) Discuss the need for the systematic review and / or the need and focus of future research in light of the PICO and RQ.

6) Performance – Systematic Review
   a) Formulating a topic and specific question (1 & 2 above).
   b) Developing a protocol (3 and 4 above)
   c) Searching and screening the literature (3 and 4 above)
   d) Data extraction and evaluating the quality of studies (4 above)
   e) Analyzing and integrating the outcomes of studies (4 above)
   f) Qualitative and quantitative methods of data integration (4 above)
   g) Assessing bias and variations in effect (4 above)
   h) Interpreting the evidence (5 above)
   i) Presenting the results (minimum content will include PICO, RQ, search and access strategy, selection criteria and a summary of the selection, and critical appraisal of 4 selected papers.)
   j) If time allows, summarize findings (4a, 4b and possibly 4c, 5a-c above), including whether the available research and evidence is adequate to use in clinical practice (research utilization and clinical
impact) in a previously determined format (BET, CAT, case report, literature review appropriate for a published “background” or “introduction” section of a scientific article, a systematic review (SR) or annotated bibliography for a SR, etc.

k) Interpret findings in light of “reason to be,” clinical significance, professional impact (5 above)
l) Invite discussion and review.
m) Presentation or publication.

Survey Research
*It is expected that the student will have an understanding of the survey research process that a research protocol can be generated including the following items:

1) Background
   a) identify previous research on the topic
   b) define the main research question being addressed by this study and any hypotheses
   c) identify any additional research questions/hypotheses that will be addressed

2) Design
   a) determine the form of survey (experimental or descriptive, or both)
   b) identify the data requirements arising from the research question(s) including both directly topic related and indirectly topic related issues
   c) identify the population to be studied (e.g. practitioners, students, novices,…)
   d) describe how the participants will be selected (recruited)
   e) select the sampling technique
   f) specify the sample size required
   g) determine how the data is to be collected (paper, web, interview, literature, observation)

3) Data Preparation and Collection
   a) describe how the survey instrument will be prepared, how a balance of open and closed
   b) forms will be used, and how related questions will be grouped
   c) define a data collection plan (how will responses be coded)
   d) define how the data will be stored
   e) identify any follow-up mechanisms for ensuring that the response rate is adequate

4) Analysis
   a) the plan should identify which data elements are used to address which research question
   b) and how the data elements will be combined to answer the question
   c) describe any statistical forms or graphical forms to be used
   d) assess the threats to validity (construct, internal, external)

5) Reporting
   a) Identify target audience, ways of providing data (e.g. pie charts, tables,…)

*The research protocol may be developed or modified from an existing project, but the student must have enough understanding to defend and justify the choices made.

In addition to modules, the student will be assisting Dr. Chang on her survey projects. This will include and is not limited to, using SurveyMonkey, contacting key stakeholders, constructing the sampling frame, etc.
SYSTEMATIC REVIEW

<table>
<thead>
<tr>
<th>Activity continued from last trimester</th>
<th>Time planned to complete</th>
<th>Actual time / effort to complete</th>
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<tbody>
<tr>
<td>Assignment 4:</td>
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<td>c) Appraise selected studies (citations) from all selected (included) studies. Use selected critical appraisal forms and desired annotation format (Best BET, CAT, SR table, etc)</td>
<td>20-40 hours</td>
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<td>d) Analysis: Summarizing the findings. Summarize the selection and critical appraisals.</td>
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<td>Assignment 5: In a narrative document:</td>
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<td>a) Synthesize the application and impact of the studies (citations) meeting both inclusion and exclusion criteria.</td>
<td>40-120 hours</td>
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<td>b) Summarize and synthesize the application impact of selected, appraised and graded citations and studies, particularly with reference to the PICO and RQ.</td>
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<td>c) Discuss the need for the systematic review and / or the need and focus of future research in light of the PICO and RQ.</td>
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<td>Assignment 6: Prepare the presentation, report or paper</td>
<td>As needed</td>
<td>40 -120 hours</td>
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<tr>
<td>Assignment 7: Follow-up and knowledge translation, EBP assessment, report to research committee</td>
<td>As needed</td>
<td>40 -120 hours</td>
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SURVEY RESEARCH

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<th>Activity</th>
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<tbody>
<tr>
<td>Overview of Course and the Survey Design Process Assignment 1: Human Protections Training <a href="http://phrp.nihtraining.com/users/login.php">http://phrp.nihtraining.com/users/login.php</a></td>
<td>2-4 hours</td>
<td>2-4 hours</td>
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<tr>
<td>Choosing Your A Survey Research Project Assignment 2: Describe a research question you would like to explore in this class and any initial thoughts you have about the survey that you would like to do or any special design challenges you already see ahead?</td>
<td>4-12 hours</td>
<td>4-12 hours</td>
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<tr>
<td>Selecting Target Population and Sampling Frame Assignment 3: In a narrative document describe: a) What is (are) the unit(s) of analysis for your study? b) To what population would you like to generalize findings?</td>
<td>2-4 hours</td>
<td>2-4 hours</td>
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<tr>
<td>Reducing Non-Response Assignment 4: In a narrative document describe: a) How big a problem will non-response be? b) How could you minimize non-response?</td>
<td>2-4 hours</td>
<td>2-4 hours</td>
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<tr>
<td>How Should Information Be Collected? Assignment 5: In a narrative document describe: Overview and Face-to-Face Interviewing a) What if you chose to use face-to-face interviewing to collect data, what would be the advantages versus disadvantages? Telephone Interviews b) What if you chose to use face to face or telephone interviewing to collect data, what would be the advantages versus disadvantages? Mail, Self-Administered, Web-based Questionnaires</td>
<td>4-8 hours</td>
<td>4-8 hours</td>
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c) What if you chose to use mail or web-based surveys to collect data, what would be the advantages versus disadvantages?

**Computer Assisted Interviewing**

d) What if you chose to use computer assisted interviewing to collect data, what would be the advantages versus disadvantages?

**Constructing the Instrument**

**Instrument Construction: Events**

**Assignment 6: In a narrative document describe:**

- a) What will your main outcome and independent variables be?
- b) How will your measures be influenced by your data collection strategy and the people you are studying?

**Instrument Construction: Opinions**

**Assignment 7: In a narrative document describe:**

- a) What types of variables are your main outcome and independent variables?
- b) Attitudes, Knowledge, Behavior, Events, Demographic Characteristics or what?
- c) What problems may respondent face trying to answer questions about these variables?

**Evaluating Survey Questions**

**Assignment 8: In a narrative document describe:**

- a) How will your measures maximize the quality of the information collected?

**Putting together the survey research protocol**

**Assignment 9: Complete the research protocol**

- 40-120 hours

**Assignment 10: Follow-up and knowledge translation, EBP assessment, report to research committee**

- As required

**Assignment 11: Research Activity**

Work on Dr. Chang’s research projects

- As required

Minimum requirement for a passing grade will be the completion of the systematic review and generation of a survey research protocol. Student efforts and outcomes will be assessed on a weekly basis and the project plan will be adjusted as needed to meet the academic requirements of the elective. This minimum requirement may be adjusted over the course of the trimester subject to Student and Instructor agreement. Time spent on this course will average 15-20 hours a week.