**COURSE DESCRIPTION:**

X-590 is an introduction to the techniques that scientists use to answer empirical questions, or more specifically, *Research Methods*. Sound research relies on effective argumentation; however, the logic, form, and format of scientific research exceed the content of our disciplines. Methodological approaches and study designs are not “one size fits all”. Our various disciplines determine the types of questions we ask; in turn, these research questions drive the methodological considerations we must make and our subsequent study design decisions. This course introduces graduate students to the major elements of scientific research and the process of science. X590 is not a statistics course, but an introduction to all the information/details between content and analytics. The focus of this course is on the “consumption” of research, not its “production”.

The product of scientific research is usually research articles or proposals to conduct research. The initial sections of these products, namely, the *Introduction*, *Background*, and *Literature Review* provide context to the research questions/objectives. The *Methods* section is the plan to answer these questions. *Theory* and *Study Design* arethe information linking hypotheses, data collection methods, and analyses. Quality research is reproducible research. Reproducibility depends on valid and reliable measurements, instruments, and analyses. By learning how to evaluate the products of research, students become better consumers.

Students will learn about the components and process of research, how to critically review the literature, and assess the reliability and validity of scientific research at each stage in the process. Specifying the appropriate method for a given research question involves a sequence of critical steps and particular details. These steps represent a movement from theoretical to the analytical: this movement is the *Scientific Method*.

Instruction begins discussion of the philosophy of science, the general types of research, the formulation of research questions, the evaluation of scientific literature, the identification of appropriate methods, and the effective articulation of methodology. We will discuss the practical considerations and the ethical issues of research. Course instruction, learning activities, and course evaluation rely on a variety of reference materials, scientific articles, lectures, interactive discussions, and multi-media presentations.

**TEACHING OBJECTIVES:**

*The instructional goals are:*

* To provide a general overview of scientific inquiry: philosophical/theoretical underpinnings, the structure and sequence, and the form and format;
* To describe the types of research and the formulation of research questions;
* To explicate the logic and rationale of research methodology;
* To introduce basic data collection methods and analytical techniques
* To expose students to practical and technical aspects of research

**LEARNING OBJECTIVES:**

*By the end of the course, the student should be able to:*

* Understand the purpose of scientific inquiry and describe the research process
* Identify relevant research articles based on a research agenda
* Discuss reliability and validity across the research process
* Effectively read, understand, interpret, evaluate, and use empirical research

**COURSE EVALUATION:**

Table 1, entitled *Course Evaluation* (below) provides an overview of assignments and student performance.

**Table 1: COURSE EVALUATION**

|  |  |  |
| --- | --- | --- |
| **ACTIVITY** | **DESCRIPTION** | **PTS** |
| **Class Participation** | Students should engage the course site regularly and thoroughly, respond to any communication/instructor requests in a timely and appropriate fashion, and prepare/ submit any requested materials in a timely manner Students should also complete the Canvas profile during the first the Summer 2015 2nd 6 week semester. | **10** |
| **Certifications** | Each student will complete the CITI “Research with Human Subjects Training” for Social/Behavioral Research or Biomedical Research (student’s choice) & the NIH “Plain Language Training” Upon completion of the CITI & NIH courses, students will submit completion reports via Canvas. | **10 Each** |
| **Class Exercises** | Each lesson requires the completion of class exercises. | **10 Each** |
| **Quizzes** | There are a number of quizzes to assess your knowledge and skills. | **10**  **Each** |
| **Final Exam** | A final exam is still to be determined. | **100** |
| **Tentative Total** | **Final Course Grade: (**# of points earned/ # of possible points x 100) = your grade |  |

**SUBMISSION OF ASSIGNMENTS:**

**Due Dates**

* I will post details of each assignment on Canvas.
* I will ONLY accept assignments in the specified formats, via Canvas and on the due dates.
* Assignments close in Canvas on the due date: late will result in a 10% deduction in points per day.
* Email attachments, hard copies, etc. are not acceptable.
* I will also make your grades available to you via Canvas.

**Canvas**

Canvas is a useful and intuitive platform for the delivery of digital courses. We have created a *Getting Started with This Course* section to guide you through the most frequently used settings/features in Canvas. Take a few minutes to review this section before viewing the course modules. Type <https://iu.instructure.com/courses/1453747/pages/getting-started-with-this-course?module_item_id=13788122> in your browser window to visit the Getting Start section. Any and all questions about the Canvas system must be directed to a campus computing consultant, not to your instructor (i.e. me)! CANVAS support can be found at <https://canvas.iu.edu/lms-prd/app> . At the very least, plan to check Canvas at least once a day throughout the term.

**READING(S):**

**Required Course Materials and Readings**

* Clark, V. L. P., & Creswell, J. W. (2014).*Understanding research: A consumer's guide*. Pearson Higher Ed.

ISBN-13: 978-0133831627

**Suggested Text**

* Trochim, W. M., & Donnelly, J. P. (2007). *Research methods knowledge base, 3rd Edition*. Atomic Dog Publishing, Cincinnati, OH

ISBN-13:9781592602919

In addition to this textbook, I may require or recommend additional readings. I will provide any additional materials in class and/or online via Canvas. Please be sure to check the X590 Canvas website regularly for updated information.

**MODIFICATIONS:**

I reserve the right to change the schedule of topics and concomitant readings, the due dates and/or the details of the assignments, require additional assignments or evaluations (i.e. tests, quizzes and/or a final) and/or any other sections of the syllabus or course content.

The time slotted for a Final Exam is **TBD.** Whether or not we have a Final Exam is to be determined.

**WEEKLY SCHEDULE:**

Table 2, entitled *Summer 2015 Schedule* (below),provides a schedule of class topics, readings, learning outcomes, and the due dates of assignments. I will announce any modifications or additional readings via Canvas. I will also make additional reading materials available via Canvas. I will publish course modules **each Friday** for the duration of the course.

**Table 2: Summer 2015 Schedule**

|  |  |  |  |
| --- | --- | --- | --- |
| **Wk** | **Lesson** | **Topics** | **Learning Outcomes** |
| 1 | 1 | **Introductions and Course Overview:** | * Understand the importance of research * Explain how scientific inquiry work * Understand the differences between scientific and non-scientific sources of information |
| 2 | 2 | **The Role of Philosophy, Reasoning & Logic in Research** | * Explain research paradigms. * Differentiate between Ontology; epistemology, and methodology * Compare different roles of theories, concepts, variables, and constructs |
| 3 | 3 | **Literature Review: Evaluating Research Literature** | * Identify key parts of research articles * Define the process of literature search * Differentiate between theoretical and applied research * Describe the process of evaluating research literature * Describe the research literature in their areas of study |
| 4 | 4 | **Research Problems & Scientific Method** | * Evaluate appropriate research questions * Explain basic research methods and concepts * Identify the intent of a study * Evaluate statement of purpose in a research study |
| 4 | 5 | **Research Methodologies: Quantitative & Qualitative Studies** | * Define Quantitative and Qualitative study methodologies * Identify the overall approach used in a research report as quantitative, qualitative, or mixed methods * Compare major approaches of both quantitative and qualitative research * Identify reasons why you should read research that used quantitative approaches and research that used qualitative approaches |
| 5 | 6 | **Methods and Results Sections of Quantitative Research Reports** | * Understand the characteristics of research design in quantitative studies * Explain data collection procedures * Identify instrumentations in quantitative studies * Understand data analysis in quantitative studies * Evaluate the methods and results sections of quantitative studies |
| 5 | 7 | **Methods and Results Sections of Qualitative Research Reports** | * Understand the characteristics of research design in qualitative studies * Explain data collection procedures * Identify instrumentations in qualitative studies * Understand data analysis in qualitative studies * Evaluate the methods and results sections of qualitative studies |
| 6 | 8 | **Analysis Instrumentation / Data Integration & Analysis** | * Describe the significance and implications of conclusion * Understand instrumentation and data Integration |

**COURSE CONTENT & ASSIGNMENT DETAILS:**

**Published each Friday in Canvas**

**POLICIES & EXPECTATIONS:**

**Contact Information**

The most reliable way to reach me is via email. You may use Canvas to generate a message to me, **but always** follow up with an email using my regular account and request delivered and read receipts. I will be able to respond, usually within 24 hours unless I am traveling. If you need to speak with me, please feel free to stop by my office during open hours (TWR 11:00 am to 1:00 pm) or set up an appointment to meet face-to-face. When you request an appointment, I will send you a meeting request. If you do not confirm the request, then I will not block out the time for the meeting on my calendar. I also expect you to have an agenda for our meetings so that we can make the most of the meeting.

My contact information is:

Email: [msayegh@indiana.edu](mailto:msayegh@indiana.edu)

Phone: 1 (812) 855-8392

Office: SPH C111

**Class Organization**

Instruction is completely on line; however timely submission of work is an expectation. If in the advent that we have a meeting (video conference or face to face), I expect you to be on time. If I have requested a meeting, I will have an agenda with specific questions or topics to cover. If a meeting is in response to your request, I expect you to be prepared with an agenda with specific questions/topics: in this way, we will be efficient and effective with our meeting times.

**Time Commitment**

This course requires significant time and effort. Assigned reading, literature searches, critical reviews, familiarization with professional writing styles and completion of the task-based assignments require substantial time commitment from students. If your time does not afford this commitment, please consider enrolling at a time more convenient to your schedule.

**Class Attendance**

This class is completely on-line.

**Ethical Conduct**

Indiana University, the School of Public Health, **nor** I tolerate academic dishonesty. Please see “Part III: Student Misconduct” in the *Code of Student Rights, Responsibilities, and Conduct* for the acts that constitute student misconduct. The code is available on the Indiana University website, at: <http://teaching.iub.edu/policies_misconduct.php?nav=policies>

The basic principle is that students take credit only for their own ideas and efforts. I will review each student’s work using *TunItIn* to assess the originality of content. I will follow disciplinary procedures set forth by the university should any violations occur. If I determine that a student plagiarized the work of other individuals or engaged in any kind of academic misconduct as defined in the IU polices, the highest final grade that the student will be able to achieve for this course will be a “D”, without exception.

**Religious Observations**

In accordance with the Office of the Dean of Faculties, any student who wishes to receive an excused absence from class must submit a request form for each day he/she plans to be absent. The form is available at the Dean of Faculties office or online at: <http://www.indiana.edu/~deanfac/download/rel_obs.html>

Students must present this form to the course instructor by the end of the first week of the SU 2015 semester (June 26, 2015). Students must submit separate forms for each of the days they plan on missing. I will fill in the bottom section of the form, photocopy the original for my records, and then return the original to you. Students can find information about the policy on religious observation on the Indiana University Dean of Faculties website, at: <http://teaching.iub.edu/policies_religious.php?nav=policies>

**Incompletes**

I *strongly discourage* incompletes: I consider requests for incompletes an under extraordinary circumstances only.

The highest grade possible to replace and incomplete is a “B”.