



RESEARCH METHODS

BIOS 230

Course Description

This course introduces students to the two types of research; qualitative and quantitative and their associated research methods. Students will be provided with the skills needed to carry out intensive research and systematic analysis.

Credit: 3 semester credits

Repeatable: No

Course Structure

The course will be presented in different formats: Lectures with and without PowerPoints, self-directed learning, discussions and student assignments etc.

Competencies

This course emphasizes competencies to enhance skills essential for a future health care professional.

- Knowledge
 - **Demonstrate content knowledge and skills in foundational courses required by biomedical professionals**
 - **Demonstrate information literacy**
 - **Demonstrate quantitative reasoning**
 - **Demonstrate longitudinal learning through coursework**
- Critical Thinking
 - **Develop the skills of self-reflection and peer assessment to improve personal performance.**
 - **Demonstrate the ability to analyze literature and written material**
 - **Demonstrate the ability to distinguish between well-reasoned and poorly reasoned arguments**
- Communication Skills
 - **Demonstrate effective presentation skills to faculty and peers.**
 - **Demonstrate effective listening skills**
 - **Demonstrate effective written communication**

Objectives:

Upon completion of the BIOS 230 course, the student should be able to describe:

- What constitutes Research
- How the research process is carried out
- How to formulate a research question that fits the FINER principle.
- How to develop an appropriate study outline in relation to the question identified for research
- Relevant data-gathering tools
- Appropriate data-gathering methods and techniques.
- Appropriate methods of data analysis, presentation and interpretation
- The process of analyzing data from extant files
- Different kinds of studies
- Measures of validity and reliability

Schedule: Dates and times to be posted at the beginning of the term on the online calendar.

Course Topics / Outline

Activity #	Lecture Topics
Week1	The importance of Research to Medical/Research Utilization; What is research made of; How research works; The FINER Principle of question wording
Week 2	Types of Research/Research Designs
Week 3	Specification and Sampling; Methods of determining sample size
Week 4	Calculating sample size for percentages and for means
Week 5	Probability and Non-probability sampling methods
Week 6	Levels of measurement; Statistical tests to be used for analyzing data collected at different levels of measurement; Threats to internal validity of a study
Week 7	Mid-Term Exam
Week 8	Guidelines for developing questionnaires; Guidelines for developing questions for questionnaires; Organization of questions on questionnaires
Week 9	Exploratory Data Analysis: Descriptive statistics; Pictorial displays; Measures of centre; Measures of spread
Week 10	Quantitative Data Analysis; The normal distributions; The t-distributions; the chi-squared distribution
Week 11	ANOVA and The F-distribution
Week 12	Validity and Reliability in Measurement
Week 13	Analysis of Observational Studies
Week 14	End of Term Exam

Assignments:

To be scheduled and informed to students during the semester.

Textbooks and Reference Materials:

John W. Creswell, J. David Creswell. Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. 5th Edition. Publisher: SAGE Publications.

Evaluation: Students are evaluated by a midterm exam, a final exam, assignments and their attendance.

Points:

	Points*
Assignments	20%
Mid Term	30%
Final exam	40%
Attendance	10%
Total points	100%

*Points are approximate and may be adjusted during the term. Students will be notified of changes.

Grade:

Percent of Points	Letter Grade
95-100%	A(h)
90-94%	A
85-89%	B+
80-84%	B
75-79%	C+
70-74%	C
<70%	F

Attendance:

Students are expected to attend at least 80% of all scheduled learning activities. Attendance in the class will be recorded. Students attended 80% or more will be awarded with 10% on total scoring system. Please note that absences due to illness or misadventure will be factored into the 20% of allowable absences if informed respective faculty or the Dean of Students.

Policies:

Professional Demeanor

The student should be thoughtful and professional when interacting with faculty and other students. Inappropriate behavior includes the use of offensive language, gestures, or remarks with sexual overtones. Students should maintain a neat and clean appearance, and dress in attire that is generally accepted as professional.

Honesty

Students are expected to demonstrate honesty and integrity in all aspects of their education and in their interactions with faculty, administration, physicians, patients, and fellow students. They will not cheat, plagiarize, or assist others in the commission of these acts.

Faculty and Office Hours:

Mr. Marcus Caine, Instructor

Student may schedule an appointment by email.