**Mel and Enid Zuckerman College of Public Health**
**University of Arizona**

**EPID 646 Measurement Issues in Epidemiology**

**Catalog Description**: This course will cover general principles and methods that can be applied to accurately measure a wide range of exposures (risk factors) in epidemiology. It covers the methods and quality control approaches for the most commonly used data collection methods in epidemiology. Major topics include methods to quantify the degree of measurement error, ways to reduce misclassification bias, methods to maximize response rates, and ethical issues in the conduct of epidemiologic research. This hands-on part of the course includes questionnaire design, data collection, and descriptive data analysis. (3 units)

**Course Objectives:** During this course, students will:

- Apply concepts to design a study that focuses on measurement of behavior and/or environmental exposures.
- Develop an appreciation for qualitative research and its use in epidemiology through discussions and experience.
- Develop a protocol to examine the reliability or validity of an exposure measure (biomarker or questionnaire).
- Develop problem solving skills through addressing complications in recruitment and data entry
- Identify aspects of data quality in epidemiologic studies (wording, grammar, formatting, data checking, coding, and creating new variables and documentation) and how such quality relates back to design of questions.
- Identify sources of major behavior or environmental based surveys.

**Learning Outcomes (Competencies Obtained):** Upon completion of this course students will be able to:

1. Recognize and describe potential biases, confounding, and effect modification that can affect epidemiological studies and analyses
2. Interpret these epidemiological analyses in the context of published literature and communicate key findings to various audiences
3. Critique and synthesize appropriate literature and research findings to address a research question
4. Conduct descriptive and analytic analyses, including strategies to assess confounding and effect modification methods, to make statistical inferences
5. Demonstrate ability to manage and analyze epidemiological data from a variety of sources
6. Organize and deliver clear presentations of research findings in varying professional formats to diverse audiences
7. Develop research questions to address health problems by appraising and identifying gaps in the current scientific literature
8. Design appropriate studies using causal inference principles for testing hypotheses in specific populations, after evaluating specific design advantages and limitations

9. Evaluate the integrity, comparability, and limitations of data to make inferences related to analyses and results
10. Lead group interactions competently, ethically, respectfully and professionally to diverse audiences
11. Organize and deliver clear presentations of research findings in varying professional formats to diverse audiences