

## LIST OF SUGGESTED COURSES

1. Replacement for MFGM 8870 (Seminar in Statistics/Research Methods)
2. Research Methods and Statistics Courses (Post-comprehensive Exam).
3. Graduate Study in Education.
4. Healthcare/Epidemiology Domain Courses

### 1. Replacement for MFGM 8870 (Seminar in Statistics/Research Methods)

The following courses are suggested as option for MFGM 8870 that students need to take from outside COBI, as part of their course work prior to taking the Comprehensive Examination.

- **RESM6120/8120 Quantitative Methods II**
  - This course builds on topics covered in Quantitative Methods I, and is limited to analyses with one continuous dependent variable. Specific learning Objectives and Topics can be found in the lecture notes for each class session/units, and are also listed below in the tentative schedule of topics/dates.
  - (Note that this course is offered Fall, Spring and Summer; and is available as a distance learning course.)
- **MATH 6690 – Multivariate Statistics**
  - Description: Multivariate normal sampling distributions, T tests and MANOVA, tests on covariance matrices, simultaneous inference, discriminant analysis, principal components, cluster analysis and factor analysis
  - 3 credit hrs; cross-listed with 8690; pre-req: MATH5690
  - Offered: Spring
- **RESM 6/8130 Multivariate Statistics**
  - This course introduces the most common techniques of multivariate statistical analysis of variance (MANOVA) used by practitioners and researchers in behavioral sciences. The course focuses on understanding the appropriate uses of multivariate tests, their assumptions, and interpretations. Common data screening techniques are also introduced. Student understanding will be enhanced by reading applied multivariate research articles, participating in class discussions, interpreting outputs and running these analyses using SPSS. All doctoral students must register for the course at the 8000 level.

- **RESM 8150/6150     Structural Equations Modeling**
  - Structural Equation Modeling (SEM) is a well-established cross disciplinary statistical modeling technique that is widely used in path analysis and confirmatory factor analysis. The availability of sophisticated yet fairly easy to use statistical packages such as Analysis of Moment Structures (AMOS) and others (LISREL, EQS, MPlus, etc.) has made this technique more widely available and used. This initial course in SEM is intended to enable students to conduct SEM research as well as to understand and critique published SEM research. The seminar-based approach will provide an applied and practical introduction to SEM using AMOS 19 for data analysis purposes. The overarching goals are to enable students to:
    - 1. explain the theoretical underpinnings of this statistical technique
    - 2. recognize situations in which this technique should be applied
    - 3. conduct SEM analyses using AMOS
    - 4. read and evaluate existing SEM literature, and
    - 5. communicate the results of SEM analyses.
  
- **RESM 6220/8220     Measurement I**
  - Measurement One (1) is designed to introduce students to basic conceptual problems in measurement. The course is “problem centered.” Issues of testing and survey analysis are discussed using traditional and modern analytic techniques. Students will complete independent research as part of the class and present those findings to the group.
  
- **RESM 6230/8230     Measurement II**
  - Primary focus on Item Response Theory, with emphasis on 1- 2- and 3-parameter logistic models. Also covers applied issues such as test equating, scaling, item/test bias detection methods, and current issues.
  
- **RESM 6320/8320     Research Design**
  - The study of research approaches that are used in theses and dissertations. Competing designs for addressing research questions are compared. The purpose is to prepare students for their dissertation experience. The first module addresses the research proposal; problem statement, purpose statement, research questions, hypotheses.)
  - (Perhaps this course can be an option for students needing further help with their dissertation proposals.)
  
- **RESM 8340     Qualitative Research II –Design and Analysis**

- Students design, conduct and write up a qualitative study. Topics include theoretical frameworks and research design; managing, analyzing and interpreting data; collaboration between researcher and researched; using computers in analysis.
- **RESM 8350 Methods of Survey Research**
  - Survey Research is a widely used method of research in different fields, including education, psychology, health, and business. This course focuses on the survey development as contextualized within a broader research study, and as such, as logically tied into the literature, problem, purpose, and sampling. Each part of the survey development process emphasizes validity as the overarching framework for logically tying together the pieces of the study.
  - At the end of the semester, the students will develop an understanding of survey methodology and will be able to:
    - A. Develop a problem statement that is aligned with the study's purpose.
    - B. Determine the extent to which survey items are aligned with a study's purpose and problem.
    - C. Develop survey items of varying formats that best fit the study's purpose and the targeted sample.
    - D. Distinguish among different sampling plans and evaluate their advantages and disadvantages as applied to specific research problems.
    - E. Write a detailed plan for conducting survey research, including a sampling plan, instrument design, and strategy for data analysis.
    - F. Identify predominant problems in survey research literature, including problems with measurement, lack of rationale for sampling designs, and inferences made without proper evidence.

## 2. Research Methods and Statistics Courses (Post-comprehensive Exam).

### 2.1. From the Ph.D. Program in Spatially Integrated Social Science (SISS):

- **SISS 7010: SPATIAL STATISTICS** [3 hours]: The course deals with statistical theory and applied statistical techniques for spatial data analysis. Topics include descriptive statistics, statistical modeling and hypothesis testing for spatial dependence and spatial heterogeneity.
- **SISS 7020: GEOGRAPHICAL INFORMATION SCIENCE IN SISS** [3 hours]: The course emphasizes the fundamental elements of cartography, geodesy, statistics,

mathematics and geo-computational methods that form the foundation for the development of GIS and spatial analysis tools.

- **SISS 8010: FOUNDATIONS OF SPATIALLY INTEGRATED SOCIAL SCIENCE** (SISS) [4 hours]: This course will examine the historical development of the social sciences, their philosophical and methodological approaches to research, and the emergence of the spatial perspective in social science research.

## **2.2. Courses From Chemical and Environmental Engineering:**

- **CHEE6700 Management Of Projects And Technological Innovation** [3 Credit Hours]: Theory and practice of management technology applied to project management, engineering project development and major technological innovation to address new business needs and opportunities. Topics covered include schedule, budgets, performance, technology assessment and management of time and costs.
- **CHEE6790 Information Accelerated Radical Innovation** [3 Credit Hours]: Study of new Accelerated Radical Innovation discipline targeting 2X-10X improvement in innovation effectiveness, measured by reduced risk, time and cost. Assessment and modeling to speed development, transfer and profitable commercialization.

## **2.3. From Civil Engineering:**

- **CIVE6560 Transportation System Management And Economics** [3 Credit Hours]: To provide a detailed understanding of the economic principles that are applicable to public infrastructures. Critical analysis of conventional procedure in transportation studies; user and nonuser costs and benefits, the value of travel time, evaluations of transport investments and financing. Discussion on principles of Transportation System Management to maximize the efficiency and effectiveness of existing transportation systems. Funding sources and innovative funding of projects. (Cross-listed as CIVE8560 Transportation System Management And Economics)

## **2.4. From Department of Communication:**

- **COMM6220 Communication, Technology, And Society** [3 Credit Hours]: This course covers issues in communication technology including media, policy and strategic planning. Particular emphasis is given to the information revolution, communication industry development, and the marketplace for communication products.
- **COMM6260 Business, Communication and Technology** [3 Credit Hours]: The course examines how organizations use media and communication strategies. Effective tools of

communication to be studied include face-to-face interaction, dissemination of information through mass media, and communication through technologies.

## **2.5. From Environmental Science:**

- **EEES6600 Foundations of Ecology Credit** [4 credit hours]: An overview of the development of ecological concepts for beginning graduate students. Readings and discussion focus on classic papers and historical essays.

## **3. Graduate Study In Foundations of Education**

### **3.1. Theory and Social Foundations (TSOC) Doctoral Program:**

- **TSOC7100 Group Processes In Education Credit Hours: 3**

Examines intrapersonal and interpersonal principles of high performing teams, meaningful relationships, and being an effective leader and member of groups. Real-life projects will be designed, implemented and evaluated. RECOMMENDED.

- **TSOC7200 Sociological Foundations Of Education Credit Hours: 3**

Critical examination of the socio-cultural foundations of schooling in the United States, including purposes of schooling in a multicultural society and the resulting nature of teacher work. RECOMMENDED.

- **TSOC7300 Philosophy And Education Credit Hours: 3**

Exploring the nature of philosophic inquiry in education and examining competing traditions in the West, particularly in the United States. A distinction between education and schooling will be drawn. RECOMMENDED.

- **TSOC7500 Anthropology and Education Credit Hours: 3**

Examination of cross-cultural, comparative, and other studies directed toward understanding processes of cultural transmission and transformation, and implications of anthropological research for contemporary issues in education. RECOMMENDED.

- **TSOC8310 Major Educational Theorists Credit Hours: 3**

An examination of selected educational philosophers who have addressed themselves to the problem of the ends and means of education from Classical Hellenic Times to the present. RECOMMENDED.

- **TSOC8150 CULTURAL PERSPECTIVES IN LEARNING AND DEVELOPMENT**  
**Credit Hours: 3**

This course aims to develop a broader understanding of the role of culture in psychological processes and the implications of such psychological understanding for a culturally diverse society.

- **TSOC8180 Interdisciplinary Seminar In Educational Psychology, Research, And Social Foundations Credit Hours: 1**

The proseminar will enable doctoral students to improve their understanding of the research process. Students will learn to ask research questions, choose alternative methodologies and interpret the validity of conclusions.

- **TSOC8190 Seminar In Educational Theory/Social Foundations Credit Hours: 3**

The collaborative study of a specific topic in educational theory and social foundations by a group of advanced students under the direction of one or more professors.

- **TSOC 8000 WOMEN, CULTURE, AND PEDAGOGY**

[3 hours] This course surveys works of prominent feminist scholars in order to address the impact of dominant ideology upon the lives of women and girls in American schools.

- **TSOC 7210 MULTICULTURAL NON-SEXIST EDUCATION**

[3 hours] Examines how race, class, gender, ethnicity, and disability intersect with power, culture, knowledge and ideology in American schools to influence the lives of students and teachers in a multicultural society.

- **TSOC 7230 INTERGROUP AND INTERCULTURAL EDUCATION**

[3 hours] In-depth history of America's racial and ethnic minorities and the role of schooling in assisting their adaptation to and assimilation into American society.

### **3.2. Educational Psychology**

#### **3.2.1. Educational Psychology (EDP) Doctoral Program:**

- **EDP8140 Motivation Theory And Application Credit Hours: 3**

Graduate-level study of conceptions of motivation in various settings. Emphasis is on understanding major concepts and principles, as well on application to such settings as classroom, counseling and industry.

- **EDP8150 CULTURAL PERSPECTIVES IN LEARNING AND DEVELOPMENT**  
**Credit Hours: 3**

This course aims to develop a broader understanding of the role of culture in psychological processes and the implications of such psychological understanding for a culturally diverse society.

- **EDP8180 Interdisciplinary Seminar In Foundations Of Education Credit Hours: 1**

The proseminar will enable doctoral students to improve their understanding of the research process. Students will learn to ask research questions, choose alternative methodologies and interpret the validity of conclusions.

- **EDP8190 Seminar In Educational Psychology Credit Hours: 3**

The collaborative study of a specific topic in educational psychology by a group of advanced students under the direction of one or more professors.

- **EDP8240 Theories Of Development Credit Hours: 3**

Analysis and evaluation of theories of development with emphasis on the philosophical and psychological evolutionary history of the theories and their usefulness for individuals in the helping professions.

- **EDP8340 Theories Of Learning Credit Hours: 3**

Intensive inquiry into the study of learning with particular emphasis on more recent theories. Theory application in a wide variety of settings will also be stressed.

- **EDP8350 Advanced Topics In Cognition And Instruction Credit Hours: 3**

Theory and research on cognition related to learning/instruction, to include study of expertise, knowledge learned from experience, analysis of illstructured domains, tacit knowledge, and knowledge representation.

- **EDP8140 Motivation Theory And Application Credit Hours: 3**

Graduate-level study of conceptions of motivation in various settings. Emphasis is on understanding major concepts and principles, as well on application to such settings as classroom, counseling and industry.

- **EDP8340 Theories Of Learning Credit Hours: 3**

Intensive inquiry into the study of learning with particular emphasis on more recent theories. Theory application in a wide variety of settings will also be stressed.

- **EDP8350 Advanced Topics In Cognition And Instruction Credit Hours: 3**

Theory and research on cognition related to learning/instruction, to include study of expertise, knowledge learned from experience, analysis of ill-structured domains, tacit knowledge, and knowledge representation.

#### 4. Healthcare/Epidemiology Domain Courses

*This is designed as a list of potential domain courses that our PhD students can take, should they be interested in fields such as healthcare/epidemiology.*

- **PUBH 864 ISSUES IN PUBLIC HEALTH (3 credits/Fall):** Examination of various contemporary issues in public health. Included are social, economic, political and community problems in the provision of health services, health manpower and payment for health care.
- **HEAL 820 METHODS AND MATERIALS IN PUBLIC HEALTH (3 credits/Fall):** Introduces students to resource materials and methods appropriate for public health education. Students will use various mediums of instruction in direct application to public health programs.
- **HEAL 846 HEALTH PROMOTION PROGRAMS (3 credits/Fall):** An examination of current issues and research associated with health promotion in the workplace. This course will focus on the implementation and evaluation of health promotion programs appropriate to the workplace.
- **HEAL 880 EVALUATION OF HEALTH PROGRAMS (3 credits/Fall):** An exploration of types of program evaluation, evaluation models, data collection, types of data, data quality, evaluation reports, standard data collection instruments and ethical issues in health program evaluation. Prerequisites: HEAL 846
- **HEAL 890 GRANT WRITING IN HEALTH (3 credits/Spring);** Consideration is given to funding sources, proposal guidelines, and procedures for support, budgetary requirements and evaluation procedures. Students examine different types of funded projects, develop a research prospectus and grant proposal, and explore the art of politics and grantsmanship. Prerequisites: RESM 832 and HEAL 880
- **PUBH 800 BIOSTATISTICS (3 credits/Spring/Summer):** Application of statistical techniques with particular emphasis on problems in the biomedical sciences. Included in this course are data collection and presentation; basic probability theory, the concept of



populations and samples, confidence intervals; test of significance, correlation and regression, analysis of variance; and nonparametric methods.

- **PUBH 806 ADVANCED BIOSTATISTICS (3 credits Fall/Spring):** Application of advanced statistical techniques with particular emphasis on problems in the biomedical sciences. Included in the course are multiple regression, methods of analysis of variance, categorical data analysis including logistic regression, nonparametric, survival analysis and multivariate methods. Problems whose solutions involve using a statistical program (SAS or SPSS). The applied portion of the course is tailored according to the need of the students registering for the course. Students from a wide variety of programs at MUO, UT and BGSU are usually registering for this course.