



**MATH 497.001: Research Techniques for STEM and Education Majors
COURSE SYLLABUS: Summer I 2014**

Instructor: Dr. Pamela S. Webster

Office Location: Binnion Hall Room 315

Office Hours: Monday – Thursday: 11am – noon; Monday 2pm – 4pm; by appointment.

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COURSE INFORMATION

Materials – Textbooks, Readings, Supplementary Readings:

There will not be a textbook for this course. Instead, students will be expected to find journal articles, grant applications, and other supplementary readings to share with the class. In addition, the instructor has specific readings such as .ppt files, journal articles, Math 595 papers that were written by previous students, and university research procedures and policies that will be distributed for students to read and analyze.

Course Description:

This course, Research Techniques for STEM Majors, will focus on Math and Education research topics that are **necessary for the person who wishes to pursue a future graduate degree and/or who wishes to work in higher education.** Students will explore concepts that are integral to the research process at this level in higher education. Particular areas of study include: Institutional Review Boards (IRBs); topics of Research Conduct (Responsibility and Ethics that are related to research); grant writing for STEM areas; preparation for a Math 595, Undergraduate Honor's thesis, or even a dissertation; writing research articles; and other research areas. This course is a Special Topics course and will offer students a unique opportunity to experience some areas of research, such as IRB proceedings, with which students seeking graduate degrees should become familiar. **This course is cross-listed with a graduate course, MTE 597. Prerequisite: Interest in STEM research.**

Course Content:

Particular areas of study include: Institutional Review Boards (IRBs); topics of Research Conduct (Responsibility and Ethics that are related to research); grant writing for STEM areas; preparation for a Math 595, Undergraduate Honor's thesis, or even a dissertation; and other research areas.

Student Learning Outcomes:

This course, Research Techniques for STEM Majors, will focus on Math and Education research topics that are necessary for the person who wishes to pursue a future graduate degree and/or who wishes to work in higher education.

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

1. Demonstrate an ability of how to properly format an Undergraduate Honor's thesis or a Math 595 paper, as well as the basic components of a dissertation.
2. Demonstrate an understanding of the Institutional Review Board (IRB) procedure for approving research studies and all that is required of the researcher.
3. Recognize, analyze, describe, and respond to the requirements presented in a grant's Request For Proposals (RFP).
4. Understand the effects and consequences of ethical and non-ethical behavior in research.
5. Prepare a basic literature review for an article to be published in a journal.
6. Prepare a mini-grant proposal for submission to a local funding source.

COURSE REQUIREMENTS

Instructional Methods / Activities / Assessments

Instructional Methods: The goal of this course is to develop understanding of various research topics and how they will apply to the students and their futures. We will focus on underlying structures and processes that deal with writing articles and grants. Class will consist of various styles of presentation and interaction, including many in-depth discussions where students will be expected to bring in articles, grants, and other items. You will be active participants. You should come to class ready to participate, both in terms of preparation as assigned and with a positive attitude toward class and colleagues.

Daily Work: Homework will be assigned most class periods. **It is extremely important for you to work all homework in order to be prepared for the next class period, the class project, and the final exam.** We will also be working on certain supplemental assignments which will often have to be completed as homework. The total number of assignments that are completed and turned in (punctually) by the student, as well as the level of preparedness for the classroom discussions, will be reflected in the Daily Work grade. **Late work will not be accepted, no matter what the cause**

Attendance: I will be taking roll every class. All students are expected to be present, and attendance will be reflected in your Daily Work grade. If you miss a class, come see me for any missed assignments. **Please do not approach me as I am beginning a class period**, unless it is an emergency, so that we might start ON TIME. Please be in your seat and ready to work when class begins.

Projects: There will be at least two projects for this course: for undergraduates, they will consist of two individual projects. These projects will vary in their scope and should be completed punctually. In addition, you will be expected to complete certain surveys, reflections,

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and focus group/interview questions concerning your pre-existing and added knowledge (much like a pre-test/post-test). Various activities will be set up throughout the semester for you and your classmates to work on, often in groups. It is the responsibility of the students to complete these projects, even if they do not complete them during the class time. **Individual project #1 tentative due date: June 18th. Individual project #2 tentative due date: July 1st.**

Final: Our final is a comprehensive exam, **given on the last class day**. Students should expect to answer questions concerning all aspects of research, as discussed in class and as discovered through the process of completing projects and reflections during the course of the semester. **Do not expect a makeup exam for the final.**

Grading Policy:

<u>Section:</u>	<u>Total:</u>
Daily Work	25%
Projects/Participation in Interviews, Surveys, And Other Assessment Materials	50%
Comprehensive Final	25%

TECHNOLOGY REQUIREMENTS

Internet access

Word processing software (Microsoft Word preferred/compatibility required)

Email access is required. Please utilize your A&M-Commerce email address, or make me aware of your alternate email address.

A TI-83 calculator (or above) may be needed for this course.

COMMUNICATION AND SUPPORT

Interaction with Instructor Statement:

Students will be expected to interact with the instructor(s) in class or via electronic means in an appropriate manner. All instructor contact information is listed on this syllabus and should be used. Please use email to facilitate a quick response.

COURSE AND UNIVERSITY PROCEDURES/POLICIES

Course Specific Procedures:

Getting Help Outside of Office Hours: If students are in need of assistance outside of office hours, individual appointments will be scheduled.

Comments: I will do my best to make a quality presentation each day and, in return, I expect that you will do your best to learn the material presented in class. This course will be taught as hands-on as possible, and student participation is necessary daily. It is important that you be actively engaged in any group activities. Questions are welcome in the classroom, as long as they are presented appropriately and in a manner that is respectful to the instructor and other students. I know that together, these efforts can contribute significantly to your education in this class.

Students who are absent more than 2 times, for whatever reason, are subject to the instructor dropping them from the course. Two absences in this course constitutes missing 1/5 of the course, which is a very large fraction of material for a student to miss. Any student who is close to this number of absences should come to the instructor before they accumulate two absences in the course.

As stated in the Student Handbook, academic dishonesty in the class will not be tolerated. If any materials or equipment are found to be available to the student at any time which is considered inappropriate by the instructor, the very fact that the materials are inappropriately available to the student is grounds for an accusation of academic dishonesty. The instructor reserves the right to fail the student for the assignment or the course, as well as report the student to the Academic Dean, the Dean of Students, and the Graduate School. The instructor considers this an extremely serious matter. Please make sure you are not in a situation that could be viewed negatively.

Students found guilty of an act of academic dishonesty in this course will be subject to receiving an "F" in this course, as well as the above-mentioned disciplinary actions.

Supplemental Instructions: Throughout the course of your work in this class, you will be given additional written instructions that govern the look, content and scope of your projects. These supplemental instructions have the same force as the syllabus for grading purposes.

University Specific Procedures:

Student Conduct

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. (See *Code of Student Conduct from Student Guide Handbook*).

All students are expected to exercise self-discipline and respect for the rights of others at all times. Behavioral disruptions that interfere with the business of the classroom or with an individual's ability to learn may be referred to the Dean of Students.

Please be sure that cell phones and other electronic devices are off or silent. Classroom disruptions will not be tolerated. If you expect to have to get up, please select an inconspicuous position to minimize disruptions. Courtesy to others is important. That means respecting the opinions of others, and in general, doing your part to make this a positive learning environment for all students. Food and beverages, while acceptable, should be consumed as quietly as possible, and you must clean up after yourself.

ADA Statement

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services
Texas A&M University-Commerce
Gee Library 132
Phone (903) 886-5150 or (903) 886-5835
Fax (903) 468-8148
StudentDisabilityServices@tamu-commerce.edu
[Student Disability Resources & Services](#)

*Remaining enrolled in this course constitutes acceptance
of all policies contained in this syllabus.*

Any changes to this syllabus will be communicated directly to you in class by the instructor. You are responsible for being aware of any such changes.

Good luck and work hard!!

Assignment Sheet for MATH 497

The following assignments are due during the course of the MATH 497 course. They will be used as part of your grade in the course.

<u>Date Due:</u>	<u>Assignment:</u>
Tuesday, June 3 rd	Pre-Course Survey
Wednesday, June 4 th	Bring in mini-grant RFPs for review. Discuss.
Tuesday, June 10 th	Choose a mini-grant as an individual project
Wednesday, June 11 th	Turn in: Undergraduate Honor's Thesis/Math 595 Templates
Tuesday, June 17 th	Prepare for Discussion: Information about Ethics in Research, Responsible Conduct in Research, Institution Review Boards. Turn in: Between four and six reference articles on the topic of your choice, to be used in your literature review for a journal article. Turn in: Requirements for publication in the journal of your choice. (i.e. the one you would eventually wish to send your journal article)
Wednesday, June 18 th	Turn in: Individual Project #1 (Literature Review for a journal article to be submitted/published)
Tuesday, June 24 th	In-Class IRB paperwork. Individual project discussions.
Wednesday, June 25 th	Turn in: Individual Project #2 (Mini-grant proposal rough draft; final draft to be submitted at a later time if desired)
Tuesday, July 1 st	Turn in: Individual Project #2 (Mini-grant proposal final draft)
Wednesday, July 2 nd	Final Exam Post-Course Survey Group and Individual Evaluations

Weekly Schedule for MATH 497

Week 1: Overview of positions at an institution of higher education, journals, undergraduate honor's thesis, 595 papers, grants, and key terminology/Guest speaker to discuss research in the library and on databases.

Week 2: Discussion of undergraduate honor's thesis, 595 papers, journal articles, impact factors of journals, and grant submissions. Choose a grant to work on as a group as either a mock or real grant proposal.

Week 3: Discussion of Ethical behavior in Research, Institution Review Boards, and the Responsible Conduct of a Researcher. Individual Projects due. Discuss Individual Projects.

Week 4: Analyze the IRB template. Continue discussion of the Individual Projects. Individual Projects due.

Week 5: Wrap up the semester. Overview Student Learning Outcomes. Take the Final Exam.