Texas A&M University-San Antonio
College of Arts and Sciences

Water Resources Science and Technology

WATR 5305 RESEARCH PROJECT (3 SCH)
Coordinator: Dr. Walter Den
Email: wden@tamusa.edu
Office: (210)784-2815

COURSE MATERIALS

- (For reference only) *Research Methods for Science* by Michael P. Marder. ISBN: 0521145848
- Access to the internet.

COURSE DESCRIPTION

Students in Professional Track of the Master's degree WATR program will complete a research project. This course provides students working on a project an overview of the important concepts of research design, data collection, statistical and interpretative analysis, final report preparation, and presentation. Students will use quantitative and qualitative methods to frame meaningful questions and conduct credible research. They will gain an overview of research intent and design, methodology and technique, format and presentation, and data management and analysis using common statistical methods. The course will develop each student's ability to use their knowledge and data collected through research to become more effective.

PREREQUISITES

WATR 5320

COURSE OUTCOMES

This course provides an overview of the important concepts of research design, data collection, statistical and interpretative analysis, final report preparation, and presentation. Students' ability to use their knowledge and data collected through research will develop and improve. Principles will be taught primarily through lectures and problem-solving. Topics to be covered include but are not limited to:

- Evaluating the feasibility of a research project
- Developing a hypothesis, a research problem and related questions
- Framing a problem
- Collecting data related to the research problem
- Measuring effectiveness
- Using data to make decisions
- Presenting data

METHOD OF INSTRUCTION
Regular meetings with the research project advisor on a small group or individual basis. Meetings will guide students to perform literature searches, discuss articles relevant to students' research projects, present research progress, and write reports.

Students must submit the **research notebook** on which all details should be recorded during the Research Project course. You may ask for one from your advisor or use your own notebook.

METHOD OF ASSESSMENT
Literature survey, methodology design, and discussion (20%)
Two Interim project reports and presentations (every five weeks) (30% @ 15% each).
Final research report and presentation (50%)

RESPONSIBILITIES AND EXPECTATIONS
Conducting an independent research project means that you will:

1. Spend a minimum of 10 hours per week carrying out the research project, similar to a regular 3-credit course. These 10 hours are primarily independent student work.
2. Meet with your mentor at mutually agreed upon times and intervals during the semester
3. If your project takes place at A&M-SA, you are required to complete lab safety training and any other institutionally required protocol, i.e., Institutional Research Board (IRB) for human subject research, Institutional Biosafety Committee (IBC) for biological sampling and testing, and Institutional Animal Care and Use Program (IACUP) for research involving living animals.
4. Communicate with both your mentor and co-advisor, if applicable, as necessary, throughout the project. Clear and continuous communication with your advisor(s) is a necessary part of the independent research project and is expected from the student.
5. Present the relevance of the research and/or findings to peer(s) in a format appropriate to the project (this may include a poster, film, installation, etc. – format to be determined with the mentor).
6. Submit a final research paper (min 25 pages, max 50 pages), appropriate to the discipline, as agreed with your faculty mentor.

Specific expectations of Research Project - Students should clearly understand the expectations and the deliverables at the beginning of the semester, preferably prior to enrolling in the course. In general, the following steps should be completed during the progression:

- students are expected to initiate communications with their advisor(s), take ownership of their project, and work independently. You must also be prepared for meetings and willing to participate in relevant discussions. Carrying out a research project is not a straightforward and predictable process as you create new (and sometimes unexpected) knowledge. It also means that communication is crucial. You must take responsibility for communicating about problems or issues that arise.

Some research projects include field research, project materials, or payment to research participants. If your Research Project requires travel or other expenses, you must include a

budget in your proposal, indicating how you will cover the proposed expenses (examples may include your home institution or a research grant). Please note: WATR does not guarantee travel or other budgetary support for Research Projects but will support as budget permits.

****Policy to Use AI-assisted Technology**

Use of Generative AI Permitted Under Some Circumstances or With Explicit Permission

There are situations and contexts within this course where you may be asked to use artificial intelligence (AI) tools to explore how they can be used. Outside of those circumstances, you should not use AI tools to generate content (text, video, audio, images) that will end up in any student work (reports and theses) that is part of your evaluation in this course. Any student work submitted using AI tools should clearly indicate with attribution what work is the student's work and what part is generated by the AI. In such cases, no more than 25% of the student work should be generated by AI. If any part of this is confusing or uncertain, students should reach out to their instructor for clarification before submitting work for grading. Use of AI-generated content without the instructor's permission and/or proper attribution in this course qualifies as academic dishonesty and violates Texas A&M-San Antonio's standards of academic integrity.