

MAE 2381 Section 005
Experimental Methods and Measurements I
Fall 2016
Tuesday and Thursday, 11:00 AM. – 11:50 AM
GACB 103

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| 1. Instructor: | Kathy Hays-Stang |
| 2. Office Location: | 323J Woolf Hall |
| 3. Office Hours: | TWTh noon to 2 PM, open door policy, or by appointment |
| 4. Phone: | 817-272-1308 |
| 5. Email: | haysstang@uta.edu |
| 6. Lecture GTA | TBA |
| 7. Lecture GTA contact information | TBA |
| 8. Class Web Site: | BLACKBOARD https://elearn.uta.edu |
| 9. Link to Additional Course Info: | open |
| 10. Course Prerequisites: | MAE 1351 and MATH 2425 |

11. Required Reading/Materials:

Textbook:

R.S. Figliola and D.E. Beasley, Theory and Design for Mechanical Measurements, 5th or 6th ed., Wiley, 2011 or 2015 (hard bound) <http://www.wiley.com/WileyCDA/WileyTitle/productCd-EHEP001804.html>, Errata on Wiley website or omega.uta.edu/~haystang/MAE2381

Information on campus specific version of textbook <http://wiley.adobeconnect.com/p85jiec6bue/>

Recommended that one paper copy of the textbook is purchased:

i. e., one hard bound full version *or* one soft bound campus specific version of the textbook

Course notes: posted on BLACKBOARD

Lab manuals: posted on BLACKBOARD

12. Course Description:

Introduction to data analysis, (basic Fourier analysis, data reduction, statistics and probability), design and planning of engineering experiments for error prediction and control. Measurement and instrumentation, basic instruments, their calibration and use.

13. Course Learning Goals/Objectives:

1. To provide a background in engineering measurements and measurement system performance
2. To convey the principles and practice for the design of measurement systems and measurement test plans, including the role of statistics and uncertainty analyses in design
3. To introduce data analysis, reduction, and reporting of results through formal reports.

14. Attendance Policy:

Attendance is expected for all lectures. Do not be late.

Attendance is mandatory for all labs. Any missed labs must be made up **immediately**.
Do not be late

Drop Policy: Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance.** Repayment of certain types of financial aid administered through the University may be required when withdrawing from or dropping a class. For more information about required repayment of financial aid or scholarship money contact the Office of Financial Aid and Scholarships (<http://www.uta.edu/ses/fao>).

15. Tentative Lecture/Topic Schedule (course content):

- Technical report writing and presentation of data
- Ethics
- Measurement systems and methods
- Signal characteristics and analysis
- Measurement system behavior
- Probability and statistics for measurement systems
- Uncertainty analysis
- Experimental planning and practical measurements

As the instructor for this course, I reserve the right to adjust this schedule in any way that serves the educational needs of the students enrolled in this course.

General expectations of students

Knowledge is power: become powerful. Take personal responsibility for mastering the material presented in this course for your own future use.

The instructor and teaching assistants are here to help you understand the course material. If you do not understand something presented in the class or lab, ask questions when they occur to you or seek help outside of class, preferably from the course instructor or GTAs.

Successful completion of a lab course has always required a student to spend significant time in the lab and writing reports.

All work that you submit should be the work that you are able to do independently.

A lab course offers the opportunity to witness and analyze phenomena that you have studied or will study as equations to model the phenomena in other courses.

To get an “A”, submit all work complete, correct, and on time. Do not bug the instructor for a “bump”.

You (or someone else on your behalf) are paying the university to offer you the opportunity to learn about experimental measurements; money paid to this university does not guarantee you credit in any course, nor a degree from this university.

Classroom expectations of Students:

- Phones, computers, etc. off. (Handwriting notes improves long term retention of material.)
 - Material found on youtube or another website may or may not be correct.
- Ask a question if you don't understand something. The answer may benefit other students.
- Class attendance is expected
 - Attend every lecture mentally and physically
 - Arrive on time and stay for the whole period
 - Mental and Physical Attendance determined by a short quiz over day's lecture.
You may view only your hand written notes to answer the quiz question.

From <http://www.uta.edu/blackboard/students/course-faq.php>

Per UT Arlington's Academic Dishonesty Regulation, "All students are expected to pursue their academic careers with honesty and integrity." Faculty members are given the option to make assignments "**SafeAssignments**" which are indicated by the green checkmark icon. **SafeAssign** is an anti-plagiarism tool that compares your work against any other works found on the Internet and in the student work database. Submitting an assignment to **SafeAssign** enters it into the **SafeAssign** database for comparison with assignments submitted by anyone at UT Arlington in the future.* For personal protection of your work, you are also given the option to include your submission not only to UT Arlington's **SafeAssign** database, but to the global **SafeAssign** database used by any others subscribed to **SafeAssign**.

***Note:** **SafeAssign** also checks against copies of assignments from previous semesters. **SafeAssign** will be used in this course when evaluating lab reports.

Specific Course Requirements with descriptions

1. **Quizzes** (number and type): 5- 10 minute, as needed over lecture or homework
2. **Examinations** (number and type):
 - One midterm (coverage – first half of semester)
 - One final (coverage – second half of semester, general questions over lab activities)
 - Both examinations are multiple choice, answer sheet will be provided.
3. **Homework:** 6-7 assignments. For credit, lecture homework must be in required format. Submitted homework is to be done by individual student. *A short quiz* similar to a homework problem will be given on the due date at the beginning of class. *Fail "homework" quizzes → Appointment(s) with GTA or instructor, and possibly get no credit for assignment(s)*
4. **Labs:** seven labs with formal lab reports. Lab reports to be prepared by individual students who work in a group of 3 or 4. Lab sections meet in **319 WH**. **Do not be late.**
5. **Missed Exams, Quizzes and Makeup Work, and Appeals Policy:**
 - **Inform instructor by email if you will miss a lab or exam. Please present proof of illness or other significant event preventing you from taking the exam/doing the lab during the scheduled time. Missed labs and exams must be made up immediately and are subject to tardiness policy – exams: 10% for up to a one week delay and then a grade of 0, missing a lab with no prior notice to the GTA: see safety briefing.**
 - **Grades on lab reports handed in late: see safety briefing.**
 - **No late/missed homework will be accepted.**
 - **Appeals – one week given for grade appeals after an assignment is handed back.**
6. **Grading Format Weighting / Point Value of Assignments and Examinations:**
 - In class lecture quizzes 5%
 - 6-7 HW assignments 20%
 - Labs 35%
 - Midterm 20%
 - Final 20%
7. **Grade Scale:** A 90-100, B 80-90, C 70-80, D 60-70, F less than 60

STANDARD UNIVERSITY POLICIES

Americans with Disabilities Act: The University of Texas at Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including the *Americans with Disabilities Act (ADA)*. All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of that disability. Any student requiring an accommodation for this course must provide the instructor with official documentation in the form of a letter certified by the staff in the Office for Students with Disabilities, University Hall 102. Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability or by calling the Office for Students with Disabilities at (817) 272-3364.

Academic Integrity: Students enrolled in this course are expected to adhere to the UT Arlington Honor Code:

I pledge, on my honor, to uphold UT Arlington's tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence. I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.

Student Support Services: UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to resources@uta.edu, or view the information at www.uta.edu/resources.

Lab Safety Training: Students registered for this course must complete all required lab safety training prior to entering the lab and undertaking any activities. Once completed, Lab Safety Training is valid for the remainder of the same academic year (i.e., through the following August) and must be completed anew in subsequent years. There are no exceptions to this University policy. Failure to complete the required training will preclude participation in any lab activities, including those for which a grade is assigned.

For MAE 2381, the lab safety training is conducted during the first lab meeting. If you are absent from this meeting, you must make up the training or you will be dropped from the course.

Electronic Communication: UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at <http://www.uta.edu/oit/cs/email/mavmail.php>.

Student Feedback Survey: At the end of each term, students enrolled in classes categorized as "lecture," "seminar," or "laboratory" shall be directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student's feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington's effort to solicit, gather, tabulate, and publish student feedback is required by state law; students are strongly urged to participate. For more information, visit <http://www.uta.edu/sfs>.

Final Review Week: A period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week *unless specified in the class syllabus*. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

Emergency Exit Procedures: Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist handicapped individuals.