Department of Mechanical and Aerospace Engineering
University Of Texas at Arlington
Measurements Lab II - MAE 3183 – RM 219 WH

Instructor: Dr. P. S. Shiakolas
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Office Hours: TBD and By Appointment (appointment must be made through email)
GTA: TBD **Office: 219 WH** **Office Hours: TBD**

Prerequisites with a C or better: MAE 2381 (Measurements I), 3310 (Thermodynamics I), 3314 (Heat Transfer), 3319 (Dynamic System Modeling and Simulation), and EE 2320 (Circuit Analysis) (or concurrent enrollment).

Note: If you do not have ALL prerequisites
you should contact Dr. Shiakolas immediately

Course Description: Fundamental measurement techniques and experimental data analysis in mechanical engineering in the fields of thermal, fluid, structures, design, and dynamic systems. Introduction to sensor calibration, digital data acquisition, uncertainty analysis, and report writing.

Course objectives: To provide an understanding of fundamental measuring techniques, obtain measurements and analyze said measurements based on engineering principles for a number of experiments/engineering applications in order to bridge the gap between theory and practice.

Topics covered: Basic Concepts, Uncertainty Analysis, Report and Memorandum writing procedures, Digital and Analog Data Collection and Analysis

Course Learning Outcomes:

(b) Design & Conduct Experiments

This is a laboratory course and you are required to come prepare to the lab in order to conduct a series of experiments. In conducting the experiments you are required to familiarize yourselves first with safety issues and subsequently with the hardware, the type of measured equipment and software to be used for conducting the experiment. You are required to record your measurements on the provided sheets or save them in electronic format where applicable. The data sheets must be signed by the instructor or the teaching assistant once the experiment is completed and before the students leave the lab.

(g) Communicate Effectively

You are required to come prepared for each experiment to be performed by studying the lab manual and be ready to effectively communicate the theory and fundamentals of the experiment to the instructor through a weekly short question and answer period.
You are required to analyze the experimentally collected data using theory available in your lab manuals or your previous course work and engineering software for data analysis and graphing.
You are required to write professional technical formal lab reports or memoranda (you will be informed when a memorandum should be written) for each laboratory experiment performed. The reports should follow the procedures and format in the lab writing manual.

Key Assignments

In order to earn a passing grade in the class, you must perform all the laboratory exercises, and obtain a passing grade (>60%) for all each technical reports/memos and Q&A independently.

SAFETY NOTE
You MUST wear EYE Protection and CLOSED TOE Shoes
at ALL times in the lab

Grading Policy – Expectations – Course Logistics

Assume no collaboration is allowed unless expressed permission is obtained from the instructor. Anyone collaborating on any work turned in for credit will be given a failing grade in the course.

Lab Assignments: You will form **groups of two** during the first two class meetings. A lab schedule will be posted on the class web page. The experiments and formal reports are a group effort. If a group member does not show up for the lab session, he/she will get a grade of zero for the experiment unless arrangements are made to perform it later and submit an individual report.

You must prepare before coming to the lab by reading and understanding the theory for the experiment you are assigned to perform. You must also prepare **an individual pre-lab report (both electronic and written) and submit it when you come to class**. The TA and/or the instructor reserve the right to question you on the theoretical aspects of the experiment (15% of lab grade). If you are not fully prepared, you may be asked not to perform the experiment, restudy the material and retested in the lab or asked to leave the lab and make arrangements to perform the experiment at a different day (based on GTA schedule and availability). The penalties for late performance and report write-up will be enforced.

The GTAs and I reserve the right to ask you to discuss and demonstrate any work you turned in for credit. If you are not able to discuss and demonstrate your own work, you will be penalized. Experiments will be performed according to the schedule (to be posted). The written reports/memos are due at the beginning of class one week after the assigned performance date. The first graded report will be available for you on time, usually a day or two before the next report is due to allow enough time for you to correct, if needed, the report to be turned in on the next experiment.

In addition to the printed matter, you are required to provide an electronic version of the submitted reports/memos. **Each group member must upload** his/her electronic versions to Blackboard by 10:00 pm of the date they are due otherwise, they will be considered late and appropriate penalties will be assessed. **Be careful to upload the correct prelab and report/memo to Blackboard – if you require more than one correction, then penalties will be assessed per correction.** The UTA Blackboard can be accessed at **http://www.uta.edu/blackboard**. If you are not familiar with Blackboard, I urge you to complete the online training and become familiar and proficient with it for the purposes of this class (consider this as your first assignment but without credit).

Excerpt 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 monitors your work against any other works found on the Internet. Upon submission, your work will be automatically added to the SafeAssign database whose purpose is to monitor future assignments submitted by anyone at UT Arlington.
For personal protection of your work, you are also given the option to include your submission not only within 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.
It is important to understand that all of your work submitted for credit through Blackboard will be added to its database and used in subsequent semesters. If it is found in the future, that your work is used by someone else for credit with your knowledge, then appropriate disciplinary actions might be taken against you and the person plagiarizing or using your work.

Q&A session and Written Report Clarification: All the Q&A sessions and the reports/memos for all the labs are to be treated as examinations for which you are getting credit for them. The purpose is to assess your understanding of the theory behind the material that the experiment addresses so at the end you will have a better understanding of the material and also to evaluate your preparation for performing the experiment in a safe manner for you and your classmates. You are **not** allowed to discuss the Q&A sessions and questions

asked with other students in any of the sessions for this class, and you are not allowed to share your reports. You are not allowed to collaborate but only with your lab partner.

If reports and information from previous or current semesters are used for any reason, this will be considered as unauthorized usage and cheating. Should it be found out that unauthorized collaboration or cheating is taking place actions will be taken according to the university policies, the university Academic Dishonesty policy and the college of engineering statement of ethics.

On-time Lab Attendance: You must be in the lab on time at the university scheduled time. If you do not show up on time you will not be allowed in the lab and you will be penalized (see penalties note). **Closed toe shoes and eye protection** are required at all times while in the lab and experiments are taking place.

Course Manuals: The required format for each report/memo is described in detail in the Introduction of the lab manual. The lab manuals are on the class web page in Adobe Acrobat PDF format. Microsoft Excel support files for some of the labs are available on the web as well.

Additional Reference Material: Your notes and textbooks from the courses on which the theoretical basis of the experiments is based on.

Expectations for Out-of-Class Study: Beyond the time required to attend each class meeting, students enrolled in this course should expect to spend on average an additional 8-9 hours per week of their own time in course-related activities, including reading required materials, completing assignments, preparing for the experiments, etc.

Experimental and Demonstration Testbeds

- Impulse Turbine (Report)
- Viscous Flow (Report)
- Physical System Response (Report)
- Air Drag Force (Report)
- Strain Measurement (Report)
- LabVIEW DAQ and Sensor Integration (Memo)
- myRIO LabVIEW Mechatronics (Memo)
- Demonstrations (time permitting)

Course Web Page: http://mars.uta.edu, **select** Courses and then **select** Measurements Lab II – MAE 3183. Material will also be posted on Blackboard.

Communication: Email communication will be through your official UTA email account. Material might be posted on Blackboard and/or web page. It is your responsibility to check your email, Blakcboard, and web page often.

Student Initiated Email: Email must be from your UTA issued email account and must have the subject heading MAE 3183 – SP16: Descriptive Title i.e. MAE 3183 – SP16: question on airdrag experiment. Emails not following the correct procedures will deleted and no further action will be taken. I usually reply to emails within one business day. The same requirements apply to communication with the GTAs as well. You must follow proper decorum in all email communication.

Grading Policy: Grading will be based on

Semester Comprehensive Exam (time to be announced later and possibly last week of classes)	10
Formal Lab Reports and Memos (2 memos = 1 formal)	80
Lab Partner Grade (due when turning in last group report)	10

Note that 15% of each experiment is allocated to Q&A with the rest allocated to formal report/memo.

Penalties: A report must be written in the required format for each experiment. Every report is due at the beginning of the class period one week after it was performed. Late report penalty is 10% (of the report grade) per day. If you miss a lab, you must make it up and the penalty for missing performing a lab will be 5% per day missed. The deadline for turning in the report for a missed experiment remains one week from the originally assigned date.

Guaranteed Grading Scale: The guaranteed grades based upon the minimum percentage number of points obtained. **92.5% - 100% A, 85% - 92.5% B, 75% - 84% C, 60% - 74% D, 0 - 60% F**
No incompletes will be given unless prior arrangements are made with the instructor and only for extreme circumstances.

Grade Grievances: Any appeal of a grade in this course must follow the procedures and deadlines for grade-related grievances as published in the current undergraduate catalog.
http://wweb.uta.edu/catalog/content/general/academic_regulations.aspx#10

Please note that once graded work is returned, you have only one week to raise objection to the earned grade otherwise the grade is permanent. Questions on grading should be discussed with the GTAs first and if the issue cannot be resolved, then it can be brought to my attention.

Drop Policy: According to university regulations and schedule. 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 as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (http://wweb.uta.edu/aao/fao/).

Software: You may use any computer software that you like, but make sure that you are proficient in it for solving the assignments for this class. Limited support will be provided for: MS Excel, MATLAB, SCILAB, and LabVIEW. **If you do not know how to use a spreadsheet, it is strongly recommended that you start learning.**

GTA Duties: The GTAs will be available to assist and provide guidance in order for you to have the best experience in this course. They have instructions do not perform any analysis for you but rather help you overcome any roadblocks you encountered. In order to get any help, you must be prepared with questions, show your work and be specific on where you need help. **Start your analysis early!**

Miscellaneous: If you have a disability, any religious holidays that you need to observe or anything else that might interfere with this class and you would like for me to know about it, you must inform me in writing (through an email) no later than the second class meeting.

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. 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.

The English Writing Center (411LIBR): [Optional.] Hours are 9 am to 8 pm Mondays-Thursdays, 9 am to 3 pm Fridays and Noon to 5 pm Saturdays and Sundays. Walk In ***Quick Hits*** sessions during all open hours Mon-Thurs. Register and make appointments online at http://uta.mywconline.com. Classroom Visits, Workshops, and advanced services for graduate students and faculty are also available. Please see www.uta.edu/owl for detailed information.

Disability Accommodations: UT 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), The Americans with Disabilities Amendments Act (ADAAA),* and *Section 504 of the Rehabilitation Act.* 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 disability. Students are responsible for providing the instructor with official

notification in the form of a letter certified by the **Office for Students with Disabilities (OSD).** Students experiencing a range of conditions (Physical, Learning, Chronic Health, Mental Health, and Sensory) that may cause diminished academic performance or other barriers to learning may seek services and/or accommodations by contacting:
The Office for Students with Disabilities, (OSD) www.uta.edu/disability or calling 817-272-3364.
Counseling and Psychological Services, (CAPS) www.uta.edu/caps/ or calling 817-272-3671.
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.

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.

Emergency Procedures for Disabled Personnel

- If the disabled person cannot safely evacuate the building, one person should stay with the disabled individual while another person reports his/her location to the University Police.
- Hearing impaired and visually impaired persons need only one person each to notify them of a fire alarm or guide them to safe escape routes during an evacuation.
- After evacuating employees and students have cleared all stairways, disabled persons should be assisted to the stairwell landings to await emergency personnel. All doors to the stairwells must be kept closed during this time.
- NOTE: Environmental Health & Safety would like to offer the following reminders to those who are disabled or have special needs:
- Take control without depending on others to take the first step.
- Don't be afraid to let others know you need assistance.
- Don't hesitate to communicate what your special needs are in order to make the evacuation easier and safer for you and for your assistants.
- Communicate with those who can help as soon as you are able by dialing 3003 to campus Police.
- Plan ahead. Be prepared. Know what you are going to do before an emergency arises. Make a plan and then test it. Determine what your alternatives are.
- When you enter an unfamiliar building, look it over and locate the most available telephones, note horizontal exits and ramps, note exit signs and enclosed stairwells determine if landings are large enough), note rooms that would make good areas of refuge, and note the location of fire alarm pull stations.
- Never take an elevator in a building on fire.
- Don't delay your evacuation or communication to evacuate. Speaking with someone over the telephone will help to keep you calm.

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KEEP FOR YOUR RECORDS

Academic Dishonesty
It is the philosophy of The University of Texas at Arlington that academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. Discipline may include suspensions or expulsion from the University. "Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts." (Regents' Rules and Regulations, Part One, Chapter VI, Section 3, Subsection 3.2, Subdivision 3.22)

Academic Honesty
The college of engineering academic honesty information can be found at
http://www.uta.edu/engineering/current-students/academic-honesty.php

University of Texas at Arlington Honor Code
The University of Texas at Arlington Honor Code can be found at **http://www.uta.edu/conduct/.**

> 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 that I 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.

College of Engineering Ethics
The college of engineering academic honesty information and ethics tutorials can be found at
http://www.uta.edu/engineering/current-students/academic-honesty.php
You are required to go through all the information relating to academic honesty on this web page and once completed and sign and return the attached sheet indicating you carefully went over the material, you understand the implications of the presented material and that you will abide and followUTA Honor Code in all your course work. You must return this at the second class meeting. You will not be allowed in the class if you do not return this form.

By signing below, I affirmed that I understand the information presented in the College of Engineering Academic Honesty web page and the consequences of not-following the honesty rules.

Name (Block letters)

Student ID

Date

Signature

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SIGN AND RETURN TO INSTRUCTOR BY SECOND CLASS MEETING

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