

MAE 3183 - Measurements Lab II
Spring 2020 - All sections – WH 219
Department of Mechanical and Aerospace Engineering
The University of Texas at Arlington

Instructor: Prof. P. S. Shiakolas

Office: 315 D WH **Phone:** (817) 272-5715 **Email:** shiakolas@uta.edu

Course Web Page: Canvas (there are various resources at <http://mars.uta.edu/mae3183/index.html>)

Faculty Profile: <https://www.uta.edu/profiles/panayiotis-shiakolas>

Office Hours: TBA and By Appointment (must be made through email)

GTA: TBA **Office:** 219 WH **Office Hours:** TBA and by appointment

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). If concurrent enrollment in any prerequisites you must let instructor know.

If you do not have ALL the prerequisites you should let the instructor know 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 using analog and digital measuring tools 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 and properly report the analysis findings.

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

Course Learning Outcome: ABET #6: An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.

Develop and Conduct Experiments

This is a laboratory course and you are required to come prepared 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.

Communicate Effectively

You are required to come prepared for each experiment to be performed by studying the lab manual and write a prelab. On the day of the experiment, you must be ready to effectively communicate the theory and fundamentals of the experiment to the instructor/GTAs through a question and answer period before, during or after the experiment.

You are required to analyze the experimentally collected data using information in your lab manuals and your previous course work and engineering software for data analysis and graphing.

You are required to write a professional technical formal lab report or a memorandum for each laboratory experiment performed or demonstrated. The reports should follow the procedures and format in the lab writing manual.

Key Assignments

In order to earn a passing grade in the course, you must perform all the laboratory exercises, and obtain a passing grade (>60%) for all work (for each technical report/memo and Q&A independently) including the final exam.

SAFETY NOTE

**You MUST wear EYE Protection and CLOSED TOE Shoes
At ALL times while experiments are being performed**

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 you enough time to correct, if needed, the report to be turned in for the next experiment.

In addition to the printed matter, you are required to provide an electronic version of the submitted reports/memos/prelabs. **Each group member must upload** his/her electronic versions to Canvas by 5:00 pm a day after the documents are due. If the documents are not uploaded by deadline, then they will be considered late and appropriate penalties will be assessed.

Be careful to upload the correct prelab and report/memo to Canvas – you will be allowed two upload attempts without any penalty. Canvas can be accessed through the main UTA page, <http://www.uta.edu> and then select Canvas from the top left menus.

If you are not familiar with Canvas, 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). I will inform you through an email on when Canvas becomes available.

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 setup an option to verify for plagiarism for any submitted assignments. This will be the case with any documents you submit for grading for this course.

*Note: The Plagiarism checker includes checks of documents from previous semesters and the general internet.

It is important to understand that all of your work submitted for credit through Canvas 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.

Canvas usage and operation questions should be directed to OIT support and not the instructor or GTAs. Neither the GTAs nor the Instructor are trained to provide technical support on Canvas.

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, plagiarism and cheating. Should it be found out that unauthorized collaboration or cheating is taking place, then 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 being performed.

Course Manuals: The required format for each report/memo is described in detail in an introductory document. All lab materials are on Canvas in Adobe Acrobat PDF format. Microsoft Excel support files for some of the labs are available as well.

Additional Reference Material: Your notes and textbooks from courses forming the theoretical basis of each experiment and any other resources you might like to access.

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 but not limited to reading required materials, completing assignments, preparing for the experiments, etc.

Experimental and Demonstration Testbeds Available (Tentative)

- Viscous Flow (Report)
- Physical System Response (Report)
- Strain Measurement (Report)
- Heat Exchanger (Report)
- Mechatronics – Actuators (Report/Memo)
- Mechatronics – Sensors A (Memo)
- Mechatronics – Sensors B (Memo)
- LabVIEW Strain Gage Integration (Memo)
- Demonstrations as time permits (Memo)
- Impulse Turbine & Air Drag (in repair)

Note: *As the instructor, I reserve the right to adjust this outline in any way that serves the educational needs of the students enrolled in this course*

Course Web Page: Course material will be primarily posted on Canvas which can be accessed at <https://www.uta.edu/pages/students.php> but you can also check a general (legacy) course webpage at <http://mars.uta.edu>, **select Courses** and then **select Measurements Lab II – MAE 3183**.

Email Communication: All email communication for this course will be through your official UTA email account. Materials will be emailed and/or posted on Canvas. It is your responsibility to check your email and Canvas regularly.

Student Initiated Email: Email must be from your UTA issued email account and must have the subject MAE 3183 – SP 20: Descriptive Title i.e. MAE 3183 – SP 20: Question on Physical System Response experiment.

Note: Emails not following the correct guidelines will be deleted and no further action will be taken reference to their content. I usually reply to emails within one business day (do not expect an immediate response) towards the end of the day and during normal work hours. The same requirements apply to communicating with the GTAs (using your UTA issued email, email subject, after hours communication). Any communication, personal and/or email must follow proper decorum.

Grading Policy: Grading will be based on

- Semester Comprehensive Exam (time to be announced, possibly during last week of classes) 15
- Formal Lab Reports and Memos (2 memos = 1 formal report) 85

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

Note: If you experience any issues working with your lab partner, you must inform the instructor as soon as possible.

Penalties: A report must be written in the required format for each experiment. A report for an experiment is due at the beginning of the class period one week after it was performed. Late reports are assessed a daily penalty of 10% (of the report grade). 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.

Makeup Policy: No make-up work will be given for missed experiments unless the student has a credible, documented excuse on the experiment date or an emergency, which should also be approved by the instructor (i.e., a report from doctor's office to document illness, an official document signed by the responsible university personnel for school related activities, etc.).

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**

Note: No incompletes will be assigned unless prior arrangements are made with the instructor and only for extreme circumstances.

Graded Reports/Memos: Once graded work is returned, you have **only** one week to raise objection to the earned grade, otherwise the grade is permanent. Also, **note** that any grade you receive on graded reports/memos is tentative pending uploading of your electronic reports to Canvas and the instructor/GTAs verifying for plagiarism.

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, Mathematica, and LabVIEW. *If you do not know how to use a spreadsheet, it is strongly recommended that you familiarize yourself with it.*

GTA Duties: The GTAs will be available to assist and provide guidance in order for you to have the best learning experience in this course. They have explicit instructions not to perform any analysis for you but rather help you overcome any difficulties you might encountered. In order to get any help, you must be prepared with questions, show your work and be specific on where you need help. The GTAs will usually ask you questions in an effort to guide you to find the answer on your own rather than give you the answer. *You are strongly advised to start your data 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 and through an email no later than the second class meeting.

Appointment Etiquette

- An appointment must be made during office hours or through email with at least one business day lead time.
- A walk in for last minute assistance with analysis is not an emergency and will not be honored especially the day off or before a document is due.

General Notes

- Office hours will be strictly enforced.
- In order to get help with your data analysis, you must show your work and clearly articulate the difficulties.
- Questions on concepts for an experiment the day the experiment is to be performed will not be answered.
- Questions on data analysis or other aspects for an experiment the day the report is due will not be answered nor any other assistance will be provided.
- You are strongly advised to properly plan by starting data analysis early to allow yourself enough time to ask questions (if you have difficulties) and to write a quality report.

GENERAL INFORMATION COMMON TO ALL COURSES
Measurements Lab II - MAE 3183 All sections – 219 WH
Department of Mechanical and Aerospace Engineering
University of Texas at Arlington

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.

UT Arlington faculty members may employ the Honor Code as they see fit in their courses, including (but not limited to) having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System Regents' Rule 50101, section 2.2, suspected violations of university's standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student's suspension or expulsion from the University. Additional information is available at <https://www.uta.edu/conduct/>.

Attendance: At The University of Texas at Arlington, taking attendance is not required but attendance is a critical indicator in student success. Each faculty member is free to develop his or her own methods of evaluating students' academic performance, which includes establishing course-specific policies on attendance.

However, while UT Arlington does not require instructors to take attendance in their courses, the U.S. Department of Education requires that the University have a mechanism in place to mark when Federal Student Aid recipients “begin attendance in a course”. UT Arlington instructors will report when students begin attendance in a course as part of the final grading process. Specifically, when assigning a student a grade of F, faculty report the last date a student attended their class based on evidence such as a test, participation in a class project or presentation, or an engagement online via Blackboard. This date is reported to the Department of Education for federal financial aid recipients.

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 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/>).

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. See <http://catalog.uta.edu/academicregulations/grades/#undergraduatetext>
See <http://www.uta.edu/deanofstudents/student-complaints/index.php>.

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). Only those students who have officially documented a need for an accommodation will have their request honored. 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.

Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability.

Counseling and Psychological Services (CAPS) www.uta.edu/caps/ or calling 817-272-3671 is also available to all students to help increase their understanding of personal issues, address mental and behavioral health problems and make positive changes in their lives.

Student Success Programs: 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 by appointment, drop-in tutoring, etutoring, supplemental instruction, mentoring (time management, study skills, etc.), success coaching, TRIO Student Support Services, and student success workshops. For additional information, please email resources@uta.edu, or view the Maverick Resources website.

The IDEAS Center (<https://www.uta.edu/ideas/>) (2nd Floor of Central Library) offers FREE tutoring and mentoring to all students with a focus on transfer students, sophomores, veterans and others undergoing a transition to UT Arlington. Students can drop in or check the schedule of available peer tutors at www.uta.edu/IDEAS, or call (817) 272-6593.

The English Writing Center (411LIBR): The Writing Center offers FREE tutoring in 15-, 30-, 45-, and 60-minute face-to-face and online sessions to all UTA students on any phase of their UTA coursework. Register and make appointments online at the Writing Center (<https://uta.mywconline.com>). Classroom visits, workshops, and specialized services for graduate students and faculty are also available. Please see Writing Center: OWL for detailed information on all our programs and services.

The Library's 2nd floor Academic Plaza (<http://library.uta.edu/academic-plaza>) offers students a central hub of support services, including IDEAS Center, University Advising Services, Transfer UTA and various college/school advising hours. Services are available during the library's hours of operation.

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

<https://oit.uta.edu/services/email/>

Non-Discrimination Policy: The University of Texas at Arlington does not discriminate on the basis of race, color, national origin, religion, age, gender, sexual orientation, disabilities, genetic information, and/or veteran status in its educational programs or activities it operates. For more information, visit <http://www.uta.edu/eos>

Title IX Policy: The University of Texas at Arlington ("University") is committed to maintaining a learning and working environment that is free from discrimination based on sex in accordance with Title IX of the Higher Education Amendments of 1972 (Title IX), which prohibits discrimination on the basis of sex in educational programs or activities; Title VII of the Civil Rights Act of 1964 (Title VII), which prohibits sex discrimination in employment; and the Campus Sexual Violence Elimination Act (SaVE Act). Sexual misconduct is a form of sex discrimination and will not be tolerated. For information regarding Title IX, visit www.uta.edu/titleIX or contact Ms. Jean Hood, Vice President and Title IX Coordinator at (817) 272-7091 or jmhood@uta.edu.

Campus Carry: Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes as prohibited. Under the new law, openly carrying handguns is not allowed on college campuses. For more information, visit <http://www.uta.edu/news/info/campus-carry/>

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 students with disabilities.

Active Shooter Procedures: UTA police department and in order to improve safety on campus, asked that the following link be included in our syllabi, <https://police.uta.edu/activeshooter>. This link will take you to a webpage with appropriate resources. Please visit this webpage and study the available resources.

Library Information

Ask for Help

- [Academic Plaza Consultation Services](http://library.uta.edu/academic-plaza) (library.uta.edu/academic-plaza)
- [Ask Us](http://ask.uta.edu/) (ask.uta.edu/)
- [Research Coaches](http://libguides.uta.edu/researchcoach) (http://libguides.uta.edu/researchcoach)

Resources

- [Library Tutorials](http://library.uta.edu/how-to) (library.uta.edu/how-to)
- [Subject and Course Research Guides](http://libguides.uta.edu) (libguides.uta.edu)
- [Librarians by Subject](http://library.uta.edu/subject-librarians) (library.uta.edu/subject-librarians)
- [A to Z List of Library Databases](http://libguides.uta.edu/az.php) (libguides.uta.edu/az.php)
- [Course Reserves](https://uta.summon.serialssolutions.com/#!/course_reserves) (https://uta.summon.serialssolutions.com/#!/course_reserves)
- [Study Room Reservations](http://openroom.uta.edu/) (openroom.uta.edu/)

Emergency Phone Numbers: In case of an on-campus emergency, call

The UT Arlington Police Department at **817-272-3003** (non-campus phone), **2-3003** (campus phone).

You may also dial 911.

Non-emergency number 817-272-3381

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KEEP FOR YOUR RECORDS

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 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)

Instructors may employ the Honor Code as they see fit in their courses, including (but not limited to) having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System *Regents' Rule* 50101, §2.2, suspected violations of university's standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student's suspension or expulsion from the University.

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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

You are required to visit the college of engineering Academic Honesty webpage (<http://www.uta.edu/engineering/current-students/academic-honesty.php>) and must go through the information on this page, the Resources section and the Important Related Links. study the presented information, the Resources section and the Important Related Links. After you go study the material, you must sign and return the attached sheet conforming that you studied the material on the Academic Honesty webpage, you understand the implications of the presented material and that you will abide and follow the instructions. You must return this signed sheet at the second class meeting.

Signature and Acknowledgment

By signing below, I affirmed that have been provided a syllabus and I understand the information in the syllabus as reviewed by the instructor, and I am responsible for adhering to all the policies in the syllabus. I also understand the information presented in the College of Engineering Academic Honesty web page and the consequences of not-following the honesty rules. I also understand that in order to master the material taught in this course, I must be proactive and take responsibility for my own learning, sincerely attempt the work assigned by the instructor, turn in my own work for grading purposes, complete reading assignments, actively participate in class discussion, and seek assistance as needed outside class.

Name (Block letters)

Student ID

Date

Signature

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SIGN AND RETURN TO INSTRUCTOR ON SECOND CLASS MEETING

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Name (Block letters)

Student ID

Date

Signature

Measurements Lab II - MAE 3183 – Spring 2020

GROUP	Monday	Tuesday	Wednesday	Thursday
G. 1				
G. 2				
G. 3				
G. 4				
G. 5				
G. 6				
G. 7				
G. 8				

Schedule - First Week of Experiments is (W 1) February XX, 2020

Wk	W 1	W 2	W 3	W 4	W 5	W 6	W 7	W 8	W 9	W 10	W 11
G 1	1	2	3	4	5	6	7	8	TBA	TBA	TBA
G 2	2	3	4	5	6	7	8	1	TBA	TBA	TBA
G 3	3	4	5	6	7	8	1	2	TBA	TBA	TBA
G 4	4	5	6	7	8	1	2	3	TBA	TBA	TBA
G 5	5	6	7	8	1	2	3	4	TBA	TBA	TBA
G 6	6	7	8	1	2	3	4	5	TBA	TBA	TBA
G 7	7	8	1	2	3	4	5	6	TBA	TBA	TBA
G 8	8	1	2	3	4	5	6	7	TBA	TBA	TBA

Experiment Number and Title (follow the numbering scheme below)

Exp. 1: Physical System Response (Report)
 Exp. 2: Mechatronics Actuators (Report/Memo)
 Exp. 3: Heat Exchanger (Report)
 Exp. 4: Mechatronics Sensors B (Memo)

Exp. 5: Strain Measurement (Report)
 Exp. 6: LabVIEW Strain Gauge Integration (Memo)
 Exp. 7: Viscous Flow (Report)
 Exp. 8: Mechatronics Sensors A

NOTES: Supersede Material in the Manuals

- The **Strain Measurement** and **LabVIEW Strain Gauge Integration** experiments require you to perform pre-lab analysis; perform the analysis and include it along with the results in your prelab documents.
- The **Mechatronics Sensors B** manual includes theory for the fundamental operational principle for all sensors (in both A and B). You are required to study the theory for both A and B sensor experiments as appropriate.
- For all **Mechatronics Sensors** experiments, you must print (black and white is sufficient) and bring with you the data sheets to be filled during the lab period for each experiment.
- **Mechatronics Sensors A** includes the following sensors:
Strain Gage, Piezo, Magnetic Field, Reflective Optical, Pressure, Thermistor.
- **Mechatronics Sensors B** includes the following sensors:
Infrared Distance, Ultrasonic Distance, Switch Debouncing, Encoder, Potentiometer.
- **Mechatronics Actuators** requires you to watch two videos for which you will be responsible during Q&A.
- **All experiments are Key Assignments.** Make sure you are fully prepared for the Q&A sessions. Each Q&A session exam is an interactive mini exam (written and/or oral) with one of the instructors based on the theory of the respective experiment. You are strongly encouraged to carefully study the experimental manual and revisit material in the corresponding theory class if you have any ambiguities.