

**SYRACUSE UNIVERSITY
COLLEGE OF ENGINEERING AND COMPUTER SCIENCE**

**Mechanical and Aerospace Engineering Laboratory
MAE 315 FALL 2021 Syllabus**

Lecture: M. & W. 8:25-9:20, Hall of Languages 207

CATALOG DESCRIPTION

Laboratory experiments in engineering and science topics. Introduction to statistical evaluation of data. Experiments will be selected from various topics including solid mechanics, fluid mechanics, digital signal processing and vibrations.

WEBSITE: Blackboard.syr.edu (used for all communications including grades, homework solutions, lecture material, general course information and updates)

PREREQUISITE: ECS 325

COREQUISITE: MAE 341

PREREQUISITES BY TOPIC

1. Strength of Materials
2. Differential Equations

INSTRUCTOR INFORMATION

Prof. Mark Glauser; 241 Link Hall; mglaiser@syr.edu
Office Hours: Monday/Tuesday 2:00pm-4:00pm

Prof. Jackie Anderson; 255 Link Hall; jsande03@syr.edu
Office Hours: Monday/Wednesday 10:00am-12:00pm

TEACHING ASSISTANTS INFORMATION

Seth Kelly (skell101@syr.edu) Office Location: Link 0019
Instructs Solid Mechanics Lab, holds office hours, can answer questions on material by e-mail
Office Hours: Monday/Wednesday 12:45 pm – 1:45 pm

Rishov Chatterjee (rchatte@syr.edu) Office Location: Link 0019
Instructs Digital Signal Processing Lab, holds office hours, can answer questions on material by e-mail
Office Hours: Tuesday 11:45am-1:45pm

Peter Le Porin (pleporin@syr.edu) Office Location: Link 0019
Instructs Vibrations Lab, holds office hours, can answer questions on material by e-mail

Office Hours: Monday 11:30am-12:30pm, Friday 2:30pm-3:30pm

Aleksandar Dzodic (adzodic@syr.edu) Office Location: Link 0019

Instructs Fluid Dynamics Lab, holds office hours, can answer questions on material by e-mail

Office Hours: Wednesday 11:30 pm-12:30 pm, Thursday 12:30 pm-1:30 pm

TEXTBOOK

No Textbook Required

- Course Reserve (Sci-Tech): Theory and Design for Mechanical Measurements – Second Edition by Figliola and Beasley
- Online Manual at <https://ecs.syr.edu/faculty/glauser/MAE3152/315/index.html>

COURSE TOPICS

1. Solid Mechanics Lab
2. Digital Signal Processing and Fourier Analysis Lab
3. Vibrations Lab
4. Fluid Dynamics

COURSE FORMAT

- Five laboratory experiments intended to familiarize the student with use of basic measurement devices.
- Weekly lectures will be given on experimental methods, data analysis and engineering communications.

COURSE OBJECTIVES

- A. Develop the ability to formulate the equations of motion of mechanical systems.
- B. Learn how to predict the dynamic response of linear single degree of freedom systems subject to initial excitations, harmonic and arbitrary excitations.
- C. Develop an understanding of the dynamic response of linear two degree of freedom systems with regard to natural frequencies and mode shapes.
- D. Develop skill in the simulation of the dynamic response of linear systems and its use for design.

COURSE OUTCOMES

Of the ABET Student Outcomes and Associated Performance Indicators for the MAE program MAE 315

- Outcome 1: The student demonstrates the ability to apply the material learned in strength of materials, dynamics and Fluid Dynamics / Aerodynamics, Digital Signal Processing and Fourier Analyses as well as Vibrations in the context of the Laboratory.
- Outcome 3: The student demonstrates an ability to communicate effectively by writing engineering lab reports that present, summarize, analyze and interpret

findings in a manner consistent with engineering practice, including serious uncertainty analysis.

- Outcome 5: The student demonstrates an ability to function on multi-disciplinary lab teams.
- Outcome 6: The student demonstrates the ability to conduct experiments using mechatronics concepts of computer based data acquisition and digital time series analysis as well as analyze and interpret data.
- Outcome 7: The student demonstrates an ability to review materials and learn new material as needed which may include learning to use modern tools to aid in performing experiments and analyzing and presenting such results.

OUTCOME MEASUREMENT

Assessment will be based on five labs performed virtually by students. Though the labs are performed in groups, the following assignments are to be completed on an individual basis.

Intro Lab:

- Report - 15 pts

Lab 1:

- Lab Log - 10 pts
- Calculation Report - 10 pts
- Lab Report - 30 pts

Lab 2:

- Pre-Lab - 10 pts
- Lab Log - 10 pts
- Calculation Report - 10 pts
- Lab Report - 30 pts

Lab 3:

- Lab Log - 10 pts
- Calculation Report + 5 page write-up - 20 pts

Lab 4:

- Lab Log - 10 pts
- Calculation Report - 20 pts
- Lab Report - 45 pts

Final Grades will be determined as follows:

A 92.5 or higher

A- 89 to 92

B+ 85 to 88.5

B 80 to 84.5

B- 76 to 79.5

C+ 72 to 76

C 65 to 71.5

C- 60 to 64.5

D 55 to 59.5
F Less than 55

ATTENDANCE POLICY

The University policy on classroom attendance states that “Attendance is expected in all courses at Syracuse University.”

1. If you miss classes for illness or other personal reasons, see the Student Records office for an excuse.
2. If you must miss a class or lab for a sporting event, field trip, etc., you **MUST** submit an absence request that is signed by your coach, advisor, etc. **BEFORE** you miss the class.

ACADEMIC INTEGRITY

Syracuse University’s Academic Integrity Policy reflects the high value that we, as a university community, place on honesty in academic work. The policy defines our expectations for academic honesty and holds students accountable for the integrity of all work they submit. Students should understand that it is their responsibility to learn about course-specific expectations, as well as about university-wide academic integrity expectations. The policy governs appropriate citation and use of sources, the integrity of work submitted in exams and assignments, and the veracity of signatures on attendance sheets and other verification of participation in class activities. The policy also prohibits students from submitting the same work in more than one class without receiving written authorization in advance from both instructors. Under the policy, students found in violation are subject to grade sanctions determined by the course instructor and non-grade sanctions determined by the School or College where the course is offered as described in the Violation and Sanction Classification Rubric. SU students are required to read an online summary of the University’s academic integrity expectations and provide an electronic signature agreeing to abide by them twice a year during pre-term check-in on MySlice.

For more information about the policy, see <http://academicintegrity.syr.edu>.

Related Links:

The Academic Integrity Policy:

<http://academicintegrity.syr.edu/academic-integrity-policy/>

Twenty Questions and Answers about the Academic Integrity Policy:

<http://academicintegrity.syr.edu/faculty-resources/>

What does academic integrity mean?: <http://academicintegrity.syr.edu/what-does-academic-integrity-mean/>

The College’s “Policy on Academic Integrity” applies to this course (as it does to all courses in the College).

Specifically:

1. The assignments are to be done separately by each student. While it is permissible to “discuss” problems with other students, copying solutions, Matlab code, calculations, or write-ups from any other source will result in a grade of zero for all copied solutions and will be reported to the Academic Integrity Office.
2. In written work for the lab reports, text that has been copied from another source must appear in quotes and must include a citation at the end of the sentence. Any work that constitutes plagiarism will be reported to the Academic Integrity Office.

TURNITIN

This class will use the plagiarism detection and prevention system Turnitin. This software compares submitted documents against documents on the Internet and against student papers submitted to Turnitin at Syracuse University and at other colleges and universities. I will take your knowledge of the subject matter of this course and your writing level and style into account in interpreting the originality report. Keep in mind that all papers you submit for this class will become part of the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers.

OTHER INFORMATION

If you believe that you need accommodations for a disability, please contact the Office of Disability Services (ODS), <http://disabilityservices.syr.edu>, located at 804 University Avenue, room 309, or call 315-443-4498 for an appointment to discuss your needs and the process for requesting accommodations. ODS is responsible for coordinating disability-related accommodations and will issue Accommodation Authorization Letters to students as appropriate. Since accommodations may require early planning and generally are not provided retroactively, please contact ODS as soon as possible.

Syracuse University values diversity and inclusion; we are committed to a climate of mutual respect and full participation. My goal as your instructor is to create a learning environment that is useable, equitable, inclusive and welcoming. If there are aspects of the instruction or design of this course that result in barriers to your inclusion or accurate assessment or achievement, I invite you to meet with me to discuss additional strategies beyond accommodations that may be helpful to your success.

Stay Safe Pledge

Syracuse University’s Stay Safe Pledge reflects the high value that we, as a university community, place on the well-being of our community members. This pledge defines norms for behavior that will promote community health and wellbeing. Classroom expectations include the following: wearing a mask that covers the nose and mouth at all times, maintaining a distance of six feet from others, and staying away from class if you feel unwell. Students who do not follow these norms will not be allowed to continue in face-to-face classes; repeated violations will be treated as violations of the Code of Student Conduct and may result in disciplinary action.