

Data Measurement and Analysis

EGM 5121C

Class Periods: Tuesday Period 4 (10:40 AM - 11:30 AM)
/ Thursday Periods 4 - 5 (10:40 AM - 12:35 PM)

Location: NEB0102

Academic Term: Fall 2025

Instructor:

Mark Sheplak

sheplak@ufl.edu, Please contact through the Canvas website

215 Larsen Hall

352-392-3983

Office Hours: T/Th: 2:00-3:00 p.m., other time via appointment. I will provide a Zoom link for those who prefer virtual office hours.

Teaching Assistant/Peer Mentor/Supervised Teaching Student: : n/a

Course Objectives

The objective of this course is to explore the application of time- and frequency-domain methods to time series data. The course builds upon the fundamental principles introduced in statistics and numerical & experimental methods and is intended primarily for graduate students interested in data analyses. The course emphasizes the understanding, application, and interpretation of various methods. Statistical functions (e.g., probability density functions, moments, etc.), time-domain (e.g., auto- and cross-correlation) functions, and frequency-domain (e.g., auto- and cross-spectra) methods are derived and applied to practical engineering problems. The application of the methods presented in the course will be illustrated via homework problems that utilize MATLAB. Exams will also be used to reinforce important aspects of the methods. Finally, a project will apply a specific analysis to engineering data applicable to the student's research topic.

Materials and Supply Fees: n/a

Required Textbooks and Software

- **Required Text:** Random Data: Analysis and Measurement Procedures, Fourth Edition, by J. S. Bendat and A. G. Piersol, Wiley Interscience, 2011.
- **Recommended Text:** Engineering Applications of Correlation and Spectral Analysis, Second Edition, by J. S. Bendat and A. G. Piersol, Wiley Interscience, 2013.
- **Student version or standard version of Matlab (required)**

Required Computer

Recommended Computer Specifications: <https://it.ufl.edu/get-help/student-computer-recommendations/>

HWCOE Computer Requirements: <https://www.eng.ufl.edu/students/advising/fall-semester-checklist/computer-requirements/>

Attendance Policy, Class Expectations, and Make-Up Policy

I also expect that you will attend every lecture if you are not an EDGE student. If you cannot attend a lecture, please notify me prior to class. I strongly recommend that you implement the "Five Times Strategy" for learning in this class. This requires that you cover the course material at least 5 times before exams. The first time that you cover the material is when you perform your reading assignment before class. The second time that you cover the material is during lecture. The third time that you cover the material is when you re-write your "lecture set" of notes that includes material from lecture and the reading assignments, including all derivations and your additions. The fourth time that you cover the material is when you do your homework assignments. Finally, the fifth time that you cover the material is when you study for your exams. This technique will help you master the material and will provide you with a comprehensive set of notes to potentially teach from one day.

The course will be taught from a tablet using our typeset notes, which will be posted on the website. These notes are meant to accompany the assigned readings from the text and reference books. **They are not to be considered substitutes.** You will be responsible for both the material covered in class and the assigned readings.

You are expected to show up on time for class. Please turn off all cell phones prior to the start of class. You are permitted to have a laptop, tablet etc. to take notes with. If you are a distraction in class, you will be asked to leave. Please do not bring food to class.

Re-grading Policy: Any re-grade requests must be submitted in writing within one week after return of the graded paper. The written request must explain in detail what you want the grader to do and where you believe he/she has made a mistake in grading. The request must have a date on the top of the page, your name, your telephone number(s), and e-mail address.

Miscellaneous Policies: Students will be held responsible for knowledge of all scheduling and policy announcements made in class. If you send an email please do this via Canvas and also list a phone number where you could be reached. Please use the discussion feature of Canvas as much as possible.

Make-up Exam/HW Policy: There are no make-up exams and there are no-make up HWs. I am already dropping the low regular exam score. A missed exam will count as your dropped exam. If you have a valid excused absence, I will not hold the missed HW against you. I will just grade you based on the other HWs.

Excused absences must be consistent with university policies in the Graduate Catalog (<https://catalog.ufl.edu/graduate/regulations>) and require appropriate documentation. Additional information can be found here: <https://gradcatalog.ufl.edu/graduate/regulations/>

Evaluation of Grades

Assignment	Total Points	Percentage of Final Grade
Homework Sets	100 each	25%
Exam 1 (9/25/25)	100	25%
Exam 2 (10/23/25)	100	25%
Exam 3 (11/20/25)	100	25%
Final Project	100	25%
(low exam dropped)		100%

Grading Policy

Percent	Grade	Grade Points
90.0 - 100.0	A	4.00
87.0 - 89.9	A-	3.67
84.0 - 86.9	B+	3.33
81.0 - 83.9	B	3.00
78.0 - 80.9	B-	2.67
75.0 - 79.9	C+	2.33
72.0 - 74.9	C	2.00
69.0 - 71.9	C-	1.67
66.0 - 68.9	D+	1.33
63.0 - 65.9	D	1.00
60.0 - 62.9	D-	0.67
0 - 59.9	E	0.00

More information on UF grading policy may be found at:

Academic Policies & Resources

To support consistent and accessible communication of university-wide student resources, instructors must include this link to academic policies and campus resources: <https://go.ufl.edu/syllabuspolicies>. Instructor-specific guidelines for courses must accommodate these policies.

Commitment to a Positive Learning Environment

The Herbert Wertheim College of Engineering values varied perspectives and lived experiences within our community and is committed to supporting the University's core values.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:

- Your academic advisor or Graduate Coordinator
- HWCOE Human Resources, 352-392-0904, student-support-hr@eng.ufl.edu
- Pam Dickrell, Associate Dean of Student Affairs, 352-392-2177, pld@ufl.edu