

# EE 271 Mathematical Engineering

**Fall, 2019**

**WORKMAN CENTER 116**

**MWF, 11:00-11:50**

**Instructor:** Rene Arechiga  
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**Class Time/Place:** MWF 11:00am - 11:50am in **Workman Center 116**.

**Office Hours:** TBD, by appointment, or anytime door is open

**Help Sessions and Tutoring:** [Electrical Engineering Digital Lab](#) (Workman Center 116)  
MTWR 1700-2000 and [Office for Student Learning](#)

**Corequisite:** MATH 131 (Calculus and Analytic Geometry I)

**Course Description from Catalog:** Standard programming languages in engineering are applied to data acquisition, data analysis, and mathematical modeling and computations. Fundamental concepts in Matlab and C are used to develop programming skills and techniques by addressing problems related to electrical engineering.

**Place in Curriculum:**

This course is normally offered in the Fall, for both majors and non-majors. It is a requirement for the electrical engineering major.

**Grading:**

- Homework: 33%
  - Collaboration on homework is encouraged, but the work submitted must be your own. Late homework not accepted.
- Projects: 34%
  - Projects are to be done with only those individuals and resources specified. Late projects not accepted.
- Quizzes: 33%

- Quizzes are to be done individually with only those resources specified. Quizzes will be completed during time allotted in class.

### **Textbook:**

- Introduction to MATLAB for Engineers 4th Edition, by William Palm (RECOMMENDED)
- "MATLAB: Numerical Computing" available to view as web pages at [TutorialsPoint.com/matlab](http://TutorialsPoint.com/matlab) or purchase as a pdf at [TutorialsPoint.com/matlab/matlab\\_pdf\\_version.htm](http://TutorialsPoint.com/matlab/matlab_pdf_version.htm)
- "[Learn C Programming: C Programming Language](http://TutorialsPoint.com/cprogramming)" -
- available to view as web pages at [TutorialsPoint.com/cprogramming](http://TutorialsPoint.com/cprogramming) or purchase as a pdf at [TutorialsPoint.com/cprogramming/cprogramming\\_pdf\\_version.htm](http://TutorialsPoint.com/cprogramming/cprogramming_pdf_version.htm)

### **Where to find MATLAB:**

- MATLAB is installed on computers in labs maintained by Information Technologies and Communications (ITC) (see <https://www.nmt.edu/itc/itclabs.php> for a list of rooms) and electrical engineering (Workman Center 116 and 187)
- MATLAB can be purchased at MATLAB's website:- [https://www.mathworks.com/academia/student\\_version.html](https://www.mathworks.com/academia/student_version.html)
- New Mexico Tech's bookstore
- GNU Octave, which is largely compatible with MATLAB, can be downloaded and used for free - <https://www.gnu.org/software/octave/>

### **Where to find C:**

- GNU C/C++ compiler is free with versions readily available for Linux, Mac OS and Windows
- remote use of computers maintained by ITC (see <https://www.nmt.edu/itc/itclabs.php>) or electrical engineering on which GNU C/C++ compiler is installed

**Reasonable Accommodations:** New Mexico Tech is committed to protecting the rights of individuals with disabilities. Qualified individuals who require reasonable accommodations are invited to make their needs known to the Office of Counseling and Disability Services (OCDS) as soon as possible. To schedule an appointment, please call 835-6619.

**Counseling Services:** New Mexico Tech offers mental health and substance abuse counseling through the Office of Counseling and Disability Services. The confidential services are provided free of charge by licensed professionals. To schedule an appointment, please call 835-6619.

**Academic Honesty:** New Mexico Tech's Academic Honesty Policy for undergraduate and graduate students is found in the student handbook, which can be found at: <http://www.nmt.edu/student-handbook> You are responsible for knowing, understanding, and following this policy.

**Respect Statement:** New Mexico Tech supports freedom of expression within the parameters of a respectful learning environment. As stated in the New Mexico Tech Guide to Conduct and Citizenship: "New Mexico Tech's primary purpose is education, which includes teaching, research, discussion, learning, and service. An atmosphere of free and open inquiry is essential to the pursuit of education. Tech seeks to protect academic freedom and build on individual responsibility to create and maintain an academic atmosphere that is a purposeful, just, open, disciplined, and caring community."

### **Student Outcomes for Undergraduate Program in Electrical Engineering**

Upon graduation with the degree of Bachelor of Science in Electrical Engineering, students will have obtained:

- a. an ability to apply knowledge of mathematics, science, and engineering;
- b. an ability to design and conduct experiments, as well as to analyze and interpret data;
- c. an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability;
- d. an ability to function on multidisciplinary teams;
- e. an ability to identify, formulate, and solve engineering problems;
- f. an understanding of professional and ethical responsibility;
- g. an ability to communicate effectively;
- h. the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context;
- i. a recognition of the need for, and an ability to engage in life-long learning;
- j. a knowledge of contemporary issues;
- k. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

## **Other**

Cell phones should be set on vibrate during class. Calculators will be allowed if the activity in progress requires it.

### **Academic Honesty:**

- New Mexico Tech's Academic Honesty Policy for undergraduate students is found starting on page 64 of the NMT Undergraduate Catalog, [http://www.nmt.edu/images/stories/registrar/2015-2016\\_UNDERGRADUATE\\_Catalog\\_FINAL.pdf](http://www.nmt.edu/images/stories/registrar/2015-2016_UNDERGRADUATE_Catalog_FINAL.pdf)
- You are expected to act with integrity and are responsible for knowing, understanding, and following this policy.

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[Note: It is a good idea to discuss what constitutes cheating in your class, particularly for homework and laboratory exercises. For example, do you permit students to consult on-line resources, such as Chegg homework solutions? Some faculty do, others do not. Let your students know what your policy is. For courses in which different faculty teach different sections, the faculty should agree to a uniform policy.]

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**Title IX Reporting:**

Sexual misconduct, sexual violence and other forms of sexual misconduct and gender-based discrimination are contrary to the University’s mission and core values, violate university policies, and may also violate state and federal law (Title IX). Faculty members are considered “Responsible Employees” and are required to report incidents of these prohibited behaviors. Any such reports should be directed to Tech’s Title IX Coordinator (Dr. Peter Phaijah, 20D Brown Hall, 575-835-5187, [titleixcoordinator@nmt.edu](mailto:titleixcoordinator@nmt.edu) ). Please visit Tech’s Title IX Website ([www.nmt.edu/titleix](http://www.nmt.edu/titleix)) for additional information and resources.