**ENGR 1100 Survey of Engineering Applications from Mathematics**

**Fall 2020**

**Instructor**: Dr. Lin Li

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**Phone:** 470-578-2344

**Class:** Tuesday 12:30PM to 2:15PM in **Q-107**

**Office:** M–123

**Office Hours:** Monday 9:00AM-12:00PM through MS Teams or by appointment

**Electronic Communications Statement**

The best way to reach me between class periods is email me at [lli19@kennesaw.edu](mailto:lli19@kennesaw.edu), please kindly include the class code **ENGR1100** in the email subject so that I know which class you are in. I will reply as quickly as possible to questions sent over e-mail.  At times, I will send a mass email to the class or an announcement. This will be through D2L email and alternately with the campus mail.

**Email Response Time**

I commit to answering all emails within 2 business days from the time you first transmit the email, unless I let you know in advance of travel prohibiting me from doing so (or if I have an emergency). A **business day** is a normal workday, Monday through Friday, and it does not include holidays, such as Labor Day, Thanksgiving, etc., or the days between semesters. A business day is considered to end at 5:00 p.m. Eastern Standard Time. I try to reply to e-mail much quicker, but do realize that if you procrastinate or if you are unable to find the time to work on an assessment until just before the assignment is due then I am not responsible for answering your last-minute questions just before the submission deadline.

## Textbook (None)

**Course Objective:**

The objective of this course is to increase student retention, motivation, and success in engineering through an application-oriented introduction to engineering mathematics. This course does not replace other math courses, but provides a survey of the most significant math topics used in the core freshman and sophomore-level engineering courses. These include basic descriptions of engineering applications using algebraic manipulation of engineering equations, trigonometry, vectors and complex numbers, systems of equations and matrices, differentiation, integration and differential equations. All these fundamental math topics will be presented within the context of engineering applications, and reinforced through examples of their use in the core engineering courses.

**MATLAB:**

This course also provides an introduction to the engineering analysis software MATLAB, which is a high-level language with an interactive environment used by millions of engineers and scientists worldwide. Application of the software is integrated with each course assignment. In addition, required reading and problems are frequently assigned as homework. Because of the importance of MATLAB for engineers, all the MATLAB assignments must be completed for a passing course grade.

**Course Outcome:**

By the end of this course, students will be able to:

* Apply basic concepts of Linear Algebra for vector and matrix operations,
* Input vectors and matrices in MATLAB,
* Perform 2D and 3D plotting,
* Formulate and solve systems of linear equations by Gaussian elimination, and matrix inversion,
* Write conditional statements and loops,
* Write Scripts and functions in MATLAB,
* Solve some engineering problems using MATLAB,
* Apply the fundamental knowledge of mathematics, science & engineering, to solve the real engineering problems (through case studies).

**Grading:**

Letter grades will be assigned based on a course average that is computed using the following weights

|  |  |
| --- | --- |
| Items | Percentage |
| Quizzes | 20% |
| Exam#1 | 30% |
| Exam#2 | 30% |
| Final Exam (Optional) | Optional |
| Project | 20% |
| Total | 100% |

|  |  |
| --- | --- |
| Grand Total | Grade |
| 90-100 | A |
| 80-89.9 | B |
| 70-79.9 | C |
| 60-69.9 | D |
| 59.9 and below | F |

* **Exams:** All exams will be open book/open notes and are not officially cumulative. (Topics in this course do build upon each other, so they are cumulative in that sense.) You may not collaborate with anyone during the exam period. The optional final exam is intended to replace the lowest exam grades.
* **Homework:** Sets of quizzes will be provided. **Two** attempts allowed. Lowest grades will be dropped.These will be graded and are intended to help you prepare for the exams and the project. You are welcome to work with others on the homework assignments, but you must turn in YOUR OWN work. It is not acceptable to copy someone else’s solutions, or any solutions you have obtained.
* **Project:** A course project, completed in teams of no more than 4 students, is required. Generally, successful projects involve application of engineering principles to some type of “real-world” problems. A final class presentation and a report are required for the project. Your project will be graded on the basis of clarity of presentation, readability of the report and technical accuracy. The reports should be written as a formal technical report to include executive summary, section headings, proper table and figure headings, references, appropriate appendices, etc. Details are in the “Project” module in D2L. Both students must contribute to the project and submit their joint original work. Any sources must be cited.

## Missed****/Late Work****

## All missed/late assignments without legitimate reason will receive a grade of zero.

## Attendance Policy

## Attendance is NOT required. Your attendance will not directly impact your grade in this course unless you are absent for an exam or if you fail to complete an Assignment on time.

**Help Resources:**

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Student Help Desk [studenthelpdesk@kennesaw.edu](mailto:studenthelpdesk@kennesaw.edu) or call 470.578.3555 [KSU Service Desk](https://apps.kennesaw.edu/portal/prod/app_its_ask_stu_publ/student/)

**All Federal, BOR and KSU Student Policies**

<https://cia.kennesaw.edu/instructional-resources/syllabus-policy.php>

**KSU Student Resources**

<https://cia.kennesaw.edu/instructional-resources/syllabus-resources.php>

**COVID-19 Statement**

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**Face Masks in the classroom**

As mandated by the University System of Georgia, the university **requires** the use of face masks in the classroom and in KSU buildingsto protect you, your classmates, and instructors. Per the University System of Georgia, anyone not using a face covering when required will be asked to wear one or must leave the area. Repeated refusal to comply with the requirement may result in discipline through the applicable conduct code.

Reasonable accommodations may be made for those who are unable to wear a face covering for documented health reasons. Please contact Student Disability Services at [sds@kennesaw.edu](mailto:sds@kennesaw.edu) for student accommodation requests.

**Shifting Modalities**

Please note that the university reserves the right to shift teaching modalities at any time during the semester, if health and safety guidelines require it to do so.  Some teaching modalities that may be used are F2F, Hyflex, Hybrid, or online, both synchronous and asynchronous instruction.

**Staying Home When Sick**

If you are ill, please stay home and contact your health professional.  In that case, please email the instructor to say you are missing class due to illness. Signs of illness include, but are not limited to, the following:

* Cough
* Fever of 100.4 or higher
* Runny nose or new sinus congestion
* Shortness of breath or difficulty breathing
* Chills
* Sore Throat
* New loss of taste and/or smell

**Web Cameras**

Instructors may require web cameras in their respective courses.