

Course Title : Engineering Mathematics I
[Syllabus]

2022-1st Semester

| | | | | | |
|--------|-----------------|---------------------------------|------------|------------------------|---|
| Course | Category | Major Required (Major Required) | Instructor | Department or Division | School of Electrical and Computer Engineering |
| | Number(section) | 30009 (05) | | Name | |
| | Title | Engineering Mathematics I | | Phone | |
| | Credit(Hours) | 3 Credit(3 Hours) | | E-mail | |
| | Type | lecture | | Homepage | |
| | Time(Room) | Thu 02,03,04/19-B108 | | Office Hours | |
| | school year | 2 years | Assistant | name & phone | |

| | | | | | |
|-------------------|--|---|--|--|--|
| Grading | Evaluation Method | absolute evaluation | | | |
| | <input type="checkbox"/> Attendance (0%) | <input type="checkbox"/> Portfolio (0%) | <input type="checkbox"/> Participation (0%) | | |
| | <input type="checkbox"/> Assignment (0%) | <input type="checkbox"/> Quiz (60%) | <input type="checkbox"/> Midterm Report (0%) | <input type="checkbox"/> Midterm Exam (0%) | |
| | <input type="checkbox"/> Final Report (0%) | <input type="checkbox"/> Final Exam (40%) | <input type="checkbox"/> Other (0%) | | |
| Type | Foreign Language | | | | |
| Teaching Method | Lecture | | | | |
| Plagiarism Policy | It is considered plagiarism to draw any idea or any language from someone else without adequately crediting that source in your work. It doesn't matter whether the source is a published author, another student, a Web site without clear authorship, a Web site that sells academic papers, or any other person: Taking credit for anyone else's work is stealing, and it is unacceptable in all academic situations, whether you do it intentionally or by accident. | | | | |

Any student with a disability is welcome to contact the instructor to get academic accommodations, and may be in touch with the Student Accessibility Services by calling 02-6490-6273 to discuss the process for requesting accommodations.

| Course Objectives | |
|---|--|
| The purpose of the course is to cover the basic linear algebra, differential forms for multi-variable calculus, and elementary differential equations including the Laplace transform. There will be one-hour quizzes in every other week, several surprise quizzes, and a three-hour final exam. | |
| Course Description | Textbooks and Reference Materials |
| For students majoring in Electronic, Electrical and Computer Engineering, circuit theory, control, and signal Problems in electronic, electrical and computer engineering fields such as computer science, communication, electromagnetic field, and computer Here's how to interpret it mathematically. Specifically, the differential spin equation Various solutions, Laplace transform, linear algebra (solution of algebraic equations, inverse matrix, Beck It deals with data space, linear transformation, matrix, feature value and feature vector), vector calculation, and so on. | 1. W. Kaplan, Advanced Calculus 2. FB Hildebrand, Advanced Calculus for Applications 3. HF Weinberger, A First Course in Partial Differential Equations with Complex variables and Transform methods |
| Specialty competency | Representative competency |
| Knowledge Application | Primary |
| Analysis Experiment | |
| Problem Definition | |
| Resource Utilization | Secondary |
| Planning Ability | |
| cooperative ability | |

Communicative Skills

Continuous Learning

Effect Understanding

| Specialty competency | | Representative competency | |
|----------------------|--|---------------------------|--|
| Vocational Ethics | | | |

[Weekly Lesson Plan]

| Week | Contents | Teaching Method | Teaching Materials | Requirements, Assignments, etc. |
|------|---|-----------------|--------------------|---------------------------------|
| One | Matrices and elementary row operations | lecture | | |
| 2 | Determinant, minors, matrix inversion | lecture | | |
| 3 | Solution of inhomogeneous linear equations, inverse matrix | lecture | | |
| 4 | Eigenvalue problems | lecture | | |
| 5 | Quadratic forms, spectral theorem | lecture | | quiz |
| 6 | First order ordinary differential equations | lecture | | |
| 7 | Second-order ordinary differential equations with constant coefficients | lecture | | |
| 8 | inhomogeneous differential equations with variation of parameters | lecture | | |
| 9 | Laplace transformations: fundamentals | lecture | | |
| 10 | Operational properties of Laplace transforms | lecture | | quiz |
| 11 | Partial Differential Equations | lecture | | |
| 12 | Supplementary Week | | | |
| 13 | Partial Differential Equations | lecture | | |
| 14 | Linear second-order partial differential equations in two variables | lecture | | |
| 15 | Linear second-order partial differential equations in two variables | lecture | | |
| 16 | Some properties of elliptic and parabolic equations | lecture | | Final |