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| --- | --- | --- | --- |
| **Course** | Engineering MathematicsⅠ | |  |
| **Title :** |  |
|  |  |  |
| [Sylabus] |  |  |  |
|  |  |  |  |
|  | Category | Major Required (Major Required) |  |
|  |  |  |  |
|  | Number(section) | 30009 (05) |  |
|  |  |  |  |
|  | Title | Engineering MathematicsⅠ |  |
| Course |  |  |  |
| Credit(Hours) | 3 Credit(3 Hours) |  |
|  |  |
|  |  |  |  |
|  | Type | lecture |  |
|  |  |  |  |
|  | Time(Room) | Thu 02,03,04/19-B108 |  |
|  |  |  |  |
|  | school year | 2 years |  |
|  |  |  |  |

**2022-1st Semester**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Department or | School of Electrical and |  |
|  | Division | Computer Engineering |  |
|  | Name |  |  |
|  |  |  |  |
|  | Phone |  |  |
| Instructor |  |  |  |
| E-mail |  |  |
|  |  |  |
|  |  |  |  |
|  | Homepage |  |  |
|  |  |  |  |
|  | Office Hours |  |  |
|  |  |  |  |
| Assistant | name & phone |  |  |
|  |  |  |  |

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| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Evaluation Method | |  |  | absolute evaluation |  |
|  |  |  |  |  |  |  |  |
|  |  | □ Attendance (0%) | | | □ Portfolio (0%) | □ Participation (0%) |  |
|  | Grading |  |  |  |  |  |  |
|  |  | □ Assignment (0%) | | | □ Quiz (60%) | □ Midterm Report (0%) | □ Midterm Exam (0%) |
|  |  | □ Final Report (0%) | | | □ Final Exam (40%) | □ Other (0%) |  |
|  |  |  |  |  |  |  |  |
|  | Type | | Foreign Language | |  |  |  |
|  |  |  |  |  |  |  |  |
|  | Teaching Method | | Lecture | |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  | It is considered plagiarism to draw any idea or any language from someone else wihout adequately crediting that | | | | |
|  | Plagiarism Policy | | 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 antone 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 quizs in every other week, several surprise quizs, and a three-hour final exam.

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| --- | --- | --- | --- |
|  | Course Description |  | Textbooks and Reference Materials |
|  |  |  |  |
|  | For students majoring in Electronic, Electrical and Computer Engineering, circuit theory, control, and signal | 1. W. Kaplan, Advanced Calculus | |
|  | Problems in electronic, electrical and computer engineering fields such as computer science, communication, electromagnetic field, and computer | 2. | FB Hildebrand, Advanced Calculus for Applications |
|  | Here's how to interpret it mathematically. Specifically, the differential spin equation | 3. | HF Weinberger, A First Course in Partial Differential Equations |
|  | Various solutions, Laplace transform, linear algebra (solution of algebraic equations, inverse matrix, Beck | with Complex variables and Transform methods | |
|  | It deals with data space, linear transformation, matrix, feature value and feature vector), vector calculation, and so on. |  |  |

|  |  |  |
| --- | --- | --- |
|  | 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

**Course Title:** Engineering MathematicsⅠ **2022year 1st Semester**

[Weekly Lesson Plan]

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