

공업수학2: Engineering Mathematics 2

한양대학교, ERICA
국방정보공학과
유경렬 교수

1

Linear Algebra

- 유경렬 교수,
 - 국방정보공학과
 - 연구실: 4공학관 307호 (교내전화: 5167)
 - e-mail: drwhoyoo@hanyang.ac.kr
 - Office Hrs.: 언제나 열려 있습니다!

Advanced Linear Algebra

- **Course Outline**

1. This course deals with some mathematical concepts, necessary for the studies in engineering.
2. We also study how these mathematical concepts could be applied to the solution of various engineering problems. We will also learn how to deal with these problems in a numerical approach.

- **Evaluation**

Presence (10%), Homework (20%), Mid-terms (30%, 2021-10-20 (Wed.)), Final (40%, 2020-12-15(Wed.), All in-class exam's)

- You have to attend more than 2/3 of regular classes.
- Every examination is comprehensive.

Linear Algebra: Text & References

- **Textbooks**

1. Kreigzig, [Advanced Engineering Mathematics](#), 10th Ed., Wiley

Topics to be Covered

1. Vector Differential Calculus

- Inner product
- Outer product
- Derivative of vector function
- Gradient, divergence, and curl

2. Vector Integral Calculus

- Line integral
 - Green Theorem
- Surface integral
- Triple integral
 - Divergence Theorem
 - Stoke's Theorem

공업수학2, 2021 Fall: Hanyang Univ, ERICA

5

Topics to be Covered

3. Complex Numbers & Functions

- Rectangular vs. polar forms
- Analytic function
 - Cauchy-Riemann Equations
- Complex functions

4. Complex Integration

- Line integral
- Cauchy's integral Theorem & formula
- Derivative of analytic functions

공업수학2, 2021 Fall: Hanyang Univ, ERICA

6

Topics to be Covered

5. Power & Taylor Series

- Sequence & series
 - Convergence
- Power series
- Taylor series
 - Maclaurin series
- Uniform convergence

6. Optimization

- Root finding methods: Iterative approaches
- Unconstrained optimization
 - Constrained optimization
- Steepest Gradient Descent (SGD) Algorithm
- Linear programming