

<b>COURSE</b>	Name : Linear System Computation
	Code : EE184623
	Credits : 3
	Semester : VI

### Description of Course

The Linear System Computation course deals with computational techniques of linear system analysis methods in state space representations. The first part of this lecture contains matrix computations used in the representation of the state space model. Furthermore, presented computational techniques to perform simulation and operation on the linear system. At the end, described the methods of linear system analysis used to determine the behavior of the system.

### Learning Outcomes

#### Knowledge

(P01) Mastering the concepts, procedures and principles of engineering and manifesting them in the form of procedures required for analysis and design of systems in the field of power systems, control systems, multimedia telecommunications, or electronics.

(P02) Mastering the concepts and principles of engineering, and implementing them in the form of procedures for analysis and design in power systems, control systems, multimedia telecommunications, or electronics.

#### Specific Skill

(KK01) Able to formulate engineering problems in power systems, control systems, multimedia telecommunications, or electronics.

(KK02) Able to describe the completion of engineering problems in power systems, control systems, multimedia telecommunications, or electronics.

#### General Skill

(KU02) Able to demonstrate independent performance, quality, and measurable.

(KU12) Working together to be able to take full advantage of their potential.

#### Attitude

(S09) Demonstrating attitude of responsibility on work in his/her field of expertise independently.

(S11) Trying his/her best to achieve perfect results.

(S12) Working together to be able to make the most of his/her potential.

### Course Learning Outcomes

#### KNOWLEDGE

Mastering the facts, concepts, procedures, and computational principles of linear algebra courses and linear systems.

#### SPECIFIC SKILL

Mastering the strategy of designing computer programs for linear algebra and linear systems numerically.

#### GENERAL SKILL

Able to use Matlab / Simulink software to simulate and experiment the concept of linear algebra

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and linear control system.

**ATTITUDE**

Demonstrate a responsible attitude towards the work in the field of expertise independently.

Working together to be able to take full advantage of their potential.

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**Main Subjects**

1. Euclidean and Generalization of Vector Space
2. Matrix and Determinant
3. Inner Products Space
4. Eigenvalue and Eigenvektor
5. Integral and Sum Convolution
6. Differential and Difference Equation Solutions
7. Controllability and Observability
8. Stability

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**Reference(s)**

- [1] Howard Anton and Chris Rorres, "Elementary Linear Algebra," 11th Edition, John Wiley & Sons, New York, 2014
- [2] Biswa Nath Datta, "Numerical Methods for Linear Control Systems", Elsevier, California, 2004
- [3] Steven C. Chapra, "Applied Numerical Methods with MatLab", 4th Edition, McGraw-Hill, 2017

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**Prerequisite(s)**

EE184201 Linear Algebra and Discrete Structure

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