

COURSE	Name : Electric Machines
	Code : EE185711
	Credit(s) : 2
	Semester : (Elective Course)

Description of Course

Electric Machines course generally discusses the principle of electrical energy conversion machines. In detail, the course describes the principles of electromagnetics, construction and operation of transformers, design and calculation of stresses generated in rotating electrical machines. Features and characteristics of synchronous machines, construction and analysis of induction motors, construction and analysis of dc engines.

Learning Outcomes

Knowledge

(P01) Mastering the concepts and principles of science in a comprehensive manner, and to develop procedures and strategies needed for the analysis and design of systems related to the field of power systems, control systems, multimedia telecommunications, electronics, intelligent multimedia network, or telematics as a preparation for further education or professional career.

Specific Skill

(KK01) Being able to formulate engineering problems with new ideas for the development of technology in power systems, control systems, multimedia telecommunications, electronics, intelligent multimedia network, or telematics.

General Skill

(KU10) Being able to implement the principle of sustainability in developing knowledge.

Attitude

(S06) Working together, having social sensitivity and caring for community and environment.

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

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

Course Learning Outcomes

Knowledge

Mastering the basic concepts of electrical machines and the characteristics of electric machines.

Specific Skill

Able to analyze parameters in an electric machine and be able to calculate the calculation of the needs of an electric machine in a power system.

General Skill

Being able to implement the principle of sustainability in developing knowledge in electric machines

Attitude

Working together, having social sensitivity and caring for community and environment.

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

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

Main Subjects

1. The concept of electromechanics, the basis of electrical machinery, understanding the role of magnets in electrical machinery, the basics of analysis, signs of machine variables.
2. Basic concepts, construction and various transformers in electric power systems and their operations in electric power systems.
3. The concept of a magnetic field rotates in an electric machine, the construction of the windings and the process of generating voltage in a rotating electrical system.
4. Construction and synchronous engine features and operations.
5. Determination of equivalent sequences, parameters and how to analyze synchronous machines.
6. Construction and operation of induction machines
7. Analysis of induction motor performance.
8. Construction of dc engines and their operations.
9. Characteristics of dc machines.

Reference(s)

- [1] J. Chapman, "Electric Machinery Fundamentals", McGraw-Hill, Inc., New York, St. Louis, San Francisco, Auckland, Bogotá, Caracas, Hamburg, Lisbon, London, Madrid, Mexico, Milan, Montreal, New Delhi, Paris, San Juan, São Paulo, Singapore, Sydney, Tokyo, Toronto, 1991.
- [2] S.K. Sen, "Electrical Machinery" Khanna Publishers, New Delhi, 1993..
- [3] B.S. Guru & H.R. Hiziröglu, " Electric Machinery and Transformers" Harcourt Brace Javanovich, Publishers, Technology Publications, San Diego, New York, Chicago, Austin, Washington DC, London, Tokyo, Toronto, 1988.

Prerequisite(s)

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