COURSE	Name	: Intelligent Computation for Power System
	Code	: EE185513
	Credit(s)	: 2
	Semester	: (Elective Course)

Description of Course

Expert system: concept, architecture, application in electric power system. Artificial Neural Network: concept, architecture, application in power system. Fuzzy system: concept, fuzzy logic, fuzzy model, application in power system. Decision tree: concept, type, application in power system. Genetic algorithms: concepts, applications in electrical power systems. Multi-agent system: concept, multi-agent technology, application in power system. Heuristic optimization techniques: concepts, types, applications in power systems. Unstructured learning and hybrid methods: concepts, types, applications in power systems.

Learning Outcomes

Knowledge

(P02) Mastering engineering concepts and principles to develop the necessary procedures and strategies for systems analysis and design in the areas of power systems, control systems, multimedia telecommunications, electronics, intelligent multimedia network, or telematics.

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

(KU01) Being able to develop logical, critical, systematic, and creative thinking through scientific research, the creation of designs or works of art in the field of science and technology which concerns and applies the humanities value in accordance with their field of expertise, prepares scientific conception and result of study based on rules, procedures and scientific ethics in the form of a thesis or other equivalent form, and uploaded on a college page, as well as papers published in scientific journals accredited or accepted in international journals.

Attitude

(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 intelligent computing techniques to solve power system problems.

Specific Skill

Able to modelled the power systems component with intelligent computing techniques and solve power systems problem.

General Skill

Able to use Matlab / Simulink software to perform visualization and experimentation of problems in power system using intelligent computing techniques.

Attitude

Shows a responsible attitude towards the work in the field expertise independently.

Work together to be able to make the most of it potential possessed.

Main Subjects

1. Expert system: concept, architecture, application in power system.
2. Artificial Neural Network: concept, architecture, application in power system.
3. Fuzzy system: concept, fuzzy logic, fuzzy model, application in power system.
4. Decision tree: concept, type, application in power system.
5. Genetic algorithms: concepts, applications in electrical power systems.
6. Multi-agent system: concept, multi-agent technology, application in power system.
7. Heuristic optimization techniques: concepts, types, applications in power systems.
8. Unstructured learning and hybrid methods: concepts, types, applications in power systems.

Reference(s)

[1] Mircea Eremia, Chen Ching Liu, Abdel Aty Edris, "Advanced Solutions in Power Systems HVDC, FACTS, and Artificial intelligence", IEEE Press-John Wiley & Son, 2016.
[2] Kwang Y. Lee & Mohamed A. El-Sharkawi, "Modern Heuristic Optimization Techniques-Theory and Application to Power Systems", IEEE Press-John Wiley & Son, 2008.
[3] Weerakorm Ongsakul & Dieu Ngoc Vo, "Artificial Intelligence in Power System Optimization", CRC Press, 2013
[4] James A. Momoh & Mohamed E. El-Hawary, "Electric Systems Dynamics and Stability with Artificial Intelligence Applications", Marcel Dekker, 2000
[5] Abhisek Ukil, "Intelligent Systems and Signal Processing in Power Engineering", Springer, 2007.

Prerequisite(s)

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