

**LOGIC AND APPLICATIONS OF LOGIC**  
**December 7-18, 2015**  
**IIT Kharagpur**

## Overview

As the essential foundation for rational investigation, logic is a part of every systematic field of inquiry. Its versatility is evinced in its vast and varied applications in digital electronics, computer and manufacturing technologies, and also for deliberating in law, public policy and business strategy. In view of the above, it is a value-addition to one's skill-base to be exposed to this all-important subject and its recent applications.

The course is envisaged in two modules that should be taken together.

In Module I, the topics covered will provide the participants a close overview of the fundamentals of classical logic with some applications.

Module II will be on many-valued logics and various applications.

### Topics for Module-I

- A. Propositional Calculus
- B. First Order Predicate Logic
- C. Fuzzy Set, Type-1 and Type-2 Fuzzy Logic for uncertainty management, Neuro-Fuzzy Systems, Application in Machine Learning domain (Neural Network)

### Topics for Module-II

- D. Algebraic logic, data mining, and applications
- E. Many valued logics and applications.

The course will be planned and offered as per the norms set by IIT Kharagpur for ISWT/GIAN subjects.

### Objectives

The basic objectives of this course is:

- To learn about the fundamentals of logic
- To disseminate knowledge about various aspects of logic such as
  - Propositional calculus
  - Predicate Calculus
- To expose students to some of the recent developments in logic such as
  - Fuzzy logic, uncertainty management
- To develop a logic-based skill for decision-making & appraisal of reasoning
- To get acquainted with some of the recent and important applications of logic, which includes
  - Many valued logics and their applications

### Modules

**I : Fundamentals in Logic & some applications: Dec 7-11, 2015**  
**II : Advanced Logic and Applications: Dec 14-18 2015**  
**Number of participants for the course will be limited to forty.**

## YOU SHOULD ATTEND IF..

- You are a Faculty or a student of duly authorized TEQIP II funded institutions
- Or you are a working professional from R&D organizations
- Or you are a working professional from industry
- Or you are a faculty or a student from academic institutions, other than TEQIP II funded institutions, who is interested
- in logic and its applications in various fields.
- Or you are a student of IIT Kharagpur

## REGISTRATION FEES

Participants from abroad : US \$500

Participants from Industry/ Research Organizations:

Any one of the modules : Rs. 20000/-

All modules : Rs. 30000/-

Participants from Academic Institutions other than TEQIP II Academic Institutions:

Teachers : All modules : Rs. 10000/-

Students : All modules : Rs. 2000/-

The above fee include all instructional materials, computer use for tutorials, 24 hr free internet facility. The participants will be provided with single bedded accommodation on payment basis.

## TEACHING FACULTY

**Professor Esko Tapani Turunen** is Professor of Applied Mathematics, and Head of the Department of Mathematics, Tampere University of Technology, Finland.

His research interests include Many-valued

logic, Fuzzy Set theory, Fuzzy Logic, and their applications, Data mining. Email\_id :

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**Professor Prof. Jaya Sil** is Professor of Computer Science, Department of Computer Science and Technology, Indian Institute of Engineering Science and Technology (IEST) Shibpur.

Her research interests include image

processing, pattern recognition, multi-agent systems, bioinformatics.



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**Prof. Chhanda Chakraborti** is a Professor of Philosophy, in Department of Humanities and Social Sciences,

Indian Institute of Technology Kharagpur. Her research interests include Formal and Informal Logic, Philosophical Logic. Email: [chhanda@hss.iitkgp.ernet.in](mailto:chhanda@hss.iitkgp.ernet.in)



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