CONSTRAINED AND UNCONSTRAINED OPTIMIZATION

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TYPE OF COURSE   : Rerun | Core | UG/PG
COURSE DURATION : 12 weeks (20 Jul' 20 - 9 Oct' 20)
EXAM DATE   : 18 Oct 2020

PRE-REQUISITES : Basic Mathematics

INTENDED AUDIENCE : Any engineering or mathematics student

INDUSTRIES APPLICABLE TO : R&D compnies

COURSE OUTLINE :
This course has been designed for postgraduate students. Operations research is not only important in its own right but also forms an integral part of applied sciences like economics, management science, engineering design problems etc. The course provides a systematic and thorough discussion on subject matter with numerous examples.

ABOUT INSTRUCTOR :
Prof. A. Goswami received his MSc and Ph.D. degree from Jadavpur University, India, in 1985 and 1992 respectively. In 1992, he joined the Indian Institute of Technology, Kharagpur, India, where at present he is a Professor in the Mathematics Department. His research interest includes inventory management under fuzzy environment, distributed and object-oriented databases, data mining techniques, and information security.

Prof. Debjani Chakraborty joined IIT Kharagpur as faculty member in 1997. Currently she is Associate Professor in Mathematics department. Before to this she served as a faculty in Vinod Gupta School of Management of IIT Kharagpur from 1997 to 2005. Dr. Chakraborty got B.Sc. (Maths Hons) in 1986 from Calcutta University and M.Sc. (1989) and Ph.D. (1995) from IIT Kharagpur with CSIR fellowship. Her main area of research is Theory and Application of Fuzzy Logic in Optimization. She is recipient of the prestigious Young Scientist Award 1997 in Mathematics from Indian Science Congress Association. She is nominated Member of Indian National Science Academy of Science, Allahabad.

COURSE PLAN :

Week 1**:** Linear Programming Problem

Week 2**:** LPP with artificial variable

Week 3**:** More on LPP & Introduction to sensitivity Analysis

Week 4**:** Sensitivity and duality

Week 5**:** Revised and Dual simplex method

Week 6**:** Discussion on application with examples

Week 7**:** Unconstrained optimization with single variable

Week 8**:** Discussion on Elimination techniques

Week 9**:** Unconstrained optimization with multiple variable

Week 10**:** KKT conditions

Week 11**:** Constrained optimization – direct method

Week 12**:** Constrained optimization – indirect method