OBE based Teaching Lesson Plan 2019-20

Program: B.Com(Professional)

Course Name: OPERATIONS RESEARCH

 Course Code:C4 15 MC 601

Name of the Teacher- Mr. Dileep Kumar

Semester: VI

Lecture hours: 60

Course Outcome No.	Course Outcomes	T level Indicator
CO1	Describe the nature and scope of OR Models and its applications for Business decision making.	**T2**
CO2	Develop a Linear Programming model and maximization or minimization of objective function by using graphical method.	**T6**
CO3	Solve a Linear Programming problem by using simplex or Big-M method for business decision making.	**T3**
CO4	Solve a Transportation problem for business decision making using various methods	**T3**
CO5	Solve an assignment problem for business decision making by using Hungarian method	**T3**
CO6	Develop a project network diagram and analysis by Pert or CPM method for project management.	**T6**

Module	Course	No. of	Pre-Class	Instructional	Assessment	T level

No. & Topics Covered	Outcome No.	Lecture Hours	Activity	techniques		
Module – 1 : Introduction to OR: Origin, Definitions, features, methodology, OR Models & Techniques, scope, limitations.	CO1	4	YouTube video (NPTEL)	• Online Videos • Lecture with the help of power Point presentation • Discussion	Evaluation through MCQs	T2
Module 2 - Introduction to Linear Programming 12 Hrs Basic Concepts, Construction of Linear Program Model, Problems on Formulations, Graphical Solutions, Solution of Maximization and Minimization Problems (Simple Problems).	CO2	12	YouTube video	• Lecture • Case Study • Discussion • Problem solving	Evaluation through tests and MS excel	T6
Module 3: Simplex Method: Introducti	CO3	14		• Lecture • Discussion • Problem solving	Evaluation through tests	T3

on – Standard LPP form and its Basic Solutions – Slack – Surplus and Artificial variables – Simplex Algorithm – Artificial Starting Solution – Big-M Method – Minimization of LPP – Duality (Simple Problems Only)						
Module 4: Transportation Problem: Introduction - Linear Programming Formulation of the Transportation Problem – Methods of Finding Initial Solution – North West Corner Method – Least Cost Method - Vogel's	CO4	14		• Lecture • Case Study • Discussion • Problem solving	Evaluation through tests and MS Excel	T3

Approxim ation Method – Test for Optimality – Modified Distributio n Method – Economic Interpretat ion - (Special Cases on Prohibited Routes, Unbalance d and Maximizat ion) – Trans-shipment Method (Concept Only).						
Module 5: Assignme nt Problem: Introducti on – Mathemati cal Statement of the problem – Solution Methods of Assignme nt Problem – Enumerati on Method – Simplex Method – Transport	CO5	8		• Lecture • Discussion • Case study • Problem solving	Evaluation through tests and MS Excel	T3

ation Method – Solving Problems Using Hungarian Method Only.						
Module 6: Network Analysis: Introduction – Network Analysis – Guidelines for construction of network diagram – Deterministic Time Estimates – Developing a Project – Network – Project Duration & Critical Path - Forward Pass – Backward Pass – Float – Probabilistic Time Estimates – ifference between PERT & CPM.	CO6	8		• Lecture • Discussion • Problem solving • Case Study	Evaluation through MCQs, group activity and tests	T6

Continuous Internal Assessment

- Class test 1 (before midsem exam):First week of January
- Assignment
- Class test 2 (before end sem exam):Last week of February.

Books for Reference:

- *Anderson Sweeney Williams: An Introduction to Management Science Quantitative Approaches to Decision, Thomson.*
- *Chacko, George K: Applied Operations Research/Systems Analysis in Hierarchical Decision Making, North Holland Publishing Co.*
- *Taha, Hamdy A: Operations Research, Prentice Hall, India.*
- *Hiller/Lieberman: Introduction to Operations Research, Tata McGraw Hill.*
- *Sharma S D: Operations Research, Kedarnath Ramnath & Co.*

Approved by: