GUJARAT TECHNOLOGICAL UNIVERSITY
B.E. SEMESTER : VIII
FOOD PROCESSING AND TECHNOLOGY

Subject Name: **FOOD ENGINEERING COMPUTATIONS AND NUMERICAL ANALYSIS**

Sr. No.	Course Contents	Total Hrs
1.	**Introduction:** Introduction to various software for their application in Food Process Engineering and Technology; Introduction numerical techniques in Calculus.	08
2.	**Numerical Methods:** Solution of algebraic equations- Bisection method, Newton's method and Horner's method. Solution of linear simultaneous equations- Gauss elimination method and Gauss-Jordan method and Jacobi's method, Gauss Seidal method. Solution of non-linear simultaneous equations- Newton- Raphson method.	07
3.	Interpolation of data in Tables and Charts; Graph and Curve fitting; Errors- types and their estimation.	06
4.	Application of MS Excel to solve the problems of Food Process Engineering and Technology. (a)Chemical kinetics in food processing (b)Microbial destruction in thermal processing of food.: (c) Statistical quality control (d) Sensory evaluation of food. Statistical descriptors of a population estimated from sensory data obtained from a sample; (e) Mechanical transport of liquid food (f) Solving simultaneous equations in designing multiple effect evaporators while using matrix algebra available in MS-excel.	15
5.	Familiarization with the application of computer in some common food industries like, milk plant, bakery units & fruits vegetable plants, stating from the receiving of raw material up to the storage & dispatch of finished product.	09

Reference Books:

1. Computer Applications in Food Technology: Use of Spreadsheets in Graphical, Statistical and Process Analysis (1996) by R. Paul Singh, Publisher: Elsevier Science & Technology Books ISBN: 0126463824

2. Applied Numerical Methods for Food and Agricultural Engineers (1994) by Prabir K. Chandra and R. Paul Singh, Publisher: CRC Press (ISBN 9780849324543)

3. Numerical Methods In Engineering & Science by B S Grewal , Khanna Publisher: ISBN 8174092058

4. Manuals of MS Office.

5. Excel 2007 for Scientists: Holy Macro! Books by Dr. Gerard M. Verschuuren. (ISBN: 978-1-932802-35-1)

6. Math Concepts in Food Engineering, By Richard W. Hartel et al, CRC Press 2008, ISBN: 1098765432.