Centre for Machine Learning and Intelligence
Skill Based Elective
Fundamentals of 3DFood Printing Technology& Applications
(Applicable for the UG Students admitted from 2023 – 2024 onwards)

Semester: 3 **Hours of Instruction: 4**
Subject Code : 23BAISE4 **No. of Credits: 2**

Course Objectives:

1. To understand the fundamentals of 3D Food Printing Technologies.
2. To develop the required skills for 3D design and software.
3. To provide hands on experience on 3D Food printing.

Unit 1: Introduction **-20Hrs**

Study on Food 3D Printing Technology - Applications of Food 3D printing Technology – Types 3D Food Printing, Materials needed for Printing Food, Status of Food 3D Printers, Future of Food 3D Printers, Job opportunities in Food 3D Printing technology, Designing of Food materials, Introduction to Slicing Software and it's parameters.

Unit 2: Implementation **-40Hrs**

1. Understanding the overview of food 3D Printers
2. Learn to prepare the composition of edible food materials in Liquid Form
3. Learn to prepare the composition of edible food materials in Powder Form
4. Design a Cookie in Blender
5. Design a Cake in Blender
6. Explore Additional Model Sources from Cults3D
7. Setting up the temperature, print speed and appropriate layer height in the slicing software
8. Setting up infill density, infill pattern, support material wall thickness and converting .stl file to G-code (or any other supporting format) file in slicing software.
9. Proceed with Post-processing steps such as Cooling or solidifying,Support removal,Cleaning and trimming, Decorations and enhancements and Quality Inspection
10. Design a Chocolate Cake and print it using edible materials.

Total Hours: 60

Reference Book:

1. Kamalpreet Sandhu, Sunpreet Singh, "***Food Printing: 3D Printing in Food Industry***", Springer (2022), ISBN- 978-981-16-8120-2

Reference Website Link:

1. **https://www.xometry.com/resources/3d-printing/3d-food-printing/**
2. **https://all3dp.com/2/3d-printed-food-3d-printing-food/**

Course Outcomes:

1. Acquire understanding of food 3D printing technologies and importance in industries.
2. Gain a hands-on experience on with 3D printing software's
3. Familiarize the various food 3D printing technologies in detail and understand their suitability for different scenarios.
4. Get familiar with post processing techniques to produce high quality models.
5. Acquire knowledge on slicing software and its parameter for preparing 3D models.