This course gives students an insight into developing a game either on a mobile or a desktop platform. Upon completion of the course the students would be able to-

- Possess basic ability to convert game idea into a working prototype
- Learn basic techniques for animation and simulation
- Extend the concept of game development on Web, console or VR platforms
- Develop a creative and aesthetic mindset by creating a good looking functional UI for the developed game

Practicals - **(120 Hours)**

The course will be conducted completely on a hands- on mode. The basic concepts will be explained and each concept will be augmented by small tasks initially on UNITY before designing and developing a game. The following tasks will be performed in lab:

- Introduction to Unity's Interface and Unity's Basics
- Rigid Bodies and Colliders
- Audio Source and UI Elements
- Moving Character with Code
- Introduction to Variables; Operations with Variables; Functions; Conditional Statements; Loops; Coroutines; Classes
- Creating animations, simulations and background
- Designing, developing and finalizing a game

Essential/recommended readings

- *Learning C# by Developing Games with Unity 5.x*, G. Lukosek, Packt publishing Ltd, 2016
- *Developing 2D Games with Unity: Independent Game Programming with C#*, Jared Halpern, Apress, 1st Edition, 2018
- *Unity in Action: Multiplatform Game Development in C# with Unity 5*, Joe Hocking, Manning publications, 3rd Edition, 2022
- *Unity From Zero to Proficiency (Foundations)*, Patrick Felicia, LPF publishing, 4th Edition, 2015

DISCIPLINE SPECIFIC ELECTIVE COURSE -3 (DSE-3)
V. 5.3. 3D printing using Blender

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		

3D printing using Blender#, DSE 3, V. 5.3	**4**	**0**	**0**	**4**	**Class XII pass with Mathematics**	**NIL**

 # This course will also be available to the students in semester III

Learning Objectives

The Learning Objectives of this course are

- to introduce the students to Blender
- to understand the basic concepts of 3D modelling and printing using Blender
- to identify the pitfalls in 3D printing
- to apply the slicing techniques and generate G code

Learning outcomes

This course gives students an insight into using the free and open source ware Blender for 3D printing. Upon the successful completion of the course the students are expected to generate 3D models of some simple objects like flower vase, geometrical figures, tessellation tiles, bottle lids, etc.

Practicals - (120 Hours)

The course will be conducted completely on a hands- on mode. The basic concepts will be explained and each concept will be augmented by small tasks initially on Blender before moving on to 3D printing. The following tasks will be performed in lab:

- Introduction to the User Interface and navigation in blender
- Creating simple geometrical objects like planes, cube, cylinder, cone, spheres, spirals, etc. on blender
- Movement, scaling and rotation transformations
- Simulation, animation and rendering
- Polygonal modelling for 3D printing
- 3D printing of simple geometrical objects
- Moving on to more complex 3D printing

Essential/recommended/ suggested readings

1. *Blender 3D printing tutorials for beginners,* https://all3dp.com/2/blender-3d-printing-tutorial/
2. *Blender for 3D printing design* https://www.youtube.com/watch?v=5CyaeBBQIkc&list=PLvCZK2JKGQlNt8uEM5_J12Qj7eO5MqV03
3. *3D printing from zero to hero in Blender* https://www.udemy.com/course/learn-3d-printing/