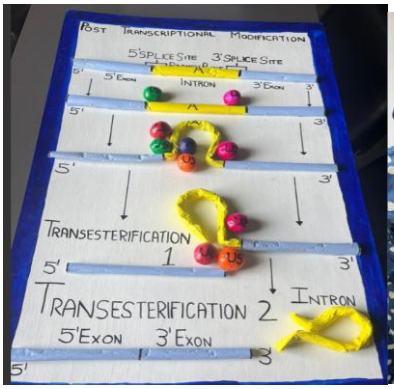
AJEENKYA D Y PATIL UNIVERSITY
THE INNOVATION UNIVERSITY
School of Engineering

Department of Biotechnology

Innovative Teaching Learning (Pedagogy) Report

Name of the Faculty	Dr. Nawneet Kumar Kurrey
Class	(Semester IV; 2nd year)
Course Taught	Molecular Biology
Academic year	2024-2025
Title of Pedagogy	3D Study Model-Based Lab Discovery Activity
Objective	▪ To visually and interactively understand the molecular mechanisms of post-transcriptional modifications ▪ To foster hands-on, inquiry-driven exploration of mRNA maturation through the construction of **3D conceptual models**. ▪ To enhance conceptual clarity and teamwork through **model-based learning** and peer teaching.
Methodology	✓ Introduces the concept of post-transcriptional modifications through guiding questions and core visual diagrams, without giving full explanations ✓ Students are divided into small groups (3–4 members), each assigned one aspect: 5’ capping, splicing, or poly-A tailing ✓ Each group conducts literature research, watches animations, and consults learning resources to understand the biochemical process in detail. ✓ Using materials like clay, foam sheets, wires, cardboard, or 3D-printable parts, students build physical models showing their assigned process. ✓ Groups present their models, explain the mechanism, enzymes involved ✓ Reviewed the scientific accuracy of models and encourages critical questions, corrections, and group reflection.
Outcome	➢ **Describe** the steps and enzymes involved in mRNA post-transcriptional modification. ➢ **Demonstrate** the structural and functional aspects of modifications using a tangible 3D model. ➢ **Differentiate** between intron splicing, 5’ capping, and polyadenylation mechanisms ➢ **Collaborate** effectively to communicate molecular processes to peers through visual storytelling

	➢ **Reflect** on the implications of post-transcriptional regulation in gene expression and disease.
Glimpses	 

Dr. Nawneet K Kurrey
Course Coordinator
Course: Molecular Biology