AMITY UNIVERSITY
UTTAR PRADESH

FORMAT FOR COURSE CURRICULUM

Course Title: Immunoinformatics

Course Code: BIOF404 **Units: 02**

L	T	P/ S	SW/F W	TOTAL CREDIT UNITS
2	0	0	0	2

Course Objectives:

Theory: This course will enable the students to acquire skill set for insilico immunological studies.

Pre-requisites: Basic knowledge about immunology & bioinformatics.

Student Learning Outcomes:

- The students will have knowledge of immune responses to various pathogens by integrating genomics and proteomics with bioinformatics strategies.
- The student will be proficient in computer aided vaccine design

Course Contents/Syllabus- Theory:

	Weightage (%)
Module I	**35**
Descriptors/Topics: Introduction to Immunoinformatics and Immunological Databases Introduction to immunology & Bioinformatics, immunoinformatics, the immune system, cellular immunity, antibody mediated immunity. Immunological databases-dbMHC-MHC database at NCBI, T-cell epitope databases, B-cell epitope databases. SYFPEITHI MHC-presented epitopes	
Module II	**35**
Descriptors/Topics: Immunological Tools Experimental and theoretical description of peptide-MHC binding, selection of epitopes using bioinformatics, prediction of proteasome processing, and TAP binding, Predictions of Class I and Class II MHC Epitopes, IEDB analysis	

Resourse, CTLPred, Population Coverage analysis, Epitope conservancy analysis.	
Module III	**30**
Descriptors/Topics: Computational Vaccinology Introduction to vaccines, Different generations of Vaccines, Concepts of reverse vaccinology, case study of Reverse Vaccinology with Meningococcus B, Comparision of Traditional Vaccinology and Reverse Vaccinology, Tools & servers for computational Vaccine design-from Genome to Vaccine.	

Pedagogy for Course Delivery:

Lectures: 28
Tutorial:
Presentation/ Seminar: 1
Class Test: 1
Total: 30

Assessment/ Examination Scheme:

Theory L/T (%)	**Lab/Practical/Studio (%)**	**Total**
100%	**NA**	**100%**

Theory Assessment (L&T):

Continuous Assessment/Internal Assessment					**End Term Examination**
Components (Drop down)	**Class Test 1**	**Viva**	**Home Assignment**	**Attendance**	
Weightage (%)	10	5	10	5	70

Text & References:

- Immunoinformatics: Bioinformatic Strategies for Better Understanding of Immune (2008), Wiley Publications. ISBN: 978-0470853566
- Predicting Immunogenicity In Silico Series(2013): Methods in Molecular Biology, Flower, Darren R. ISBN: 978-1588296993