

OPEN ELECTIVE- Semester IV: BTOE 5 Virus- Friends or Foes

Semester	IV
Paper Code	BTOE 5
Paper Title	Virus- Friends or Foes
Number of teaching hours per week	3
Total number of teaching hours per semester	42
Number of credits	3

Course 4 : Theory: Open Elective- Virus- Friends or Foes	42 Hrs
Unit 1: History & Evolution	
History of Virology - From Ancient China, Egyptian Mummies to Present Day Pandemics, Pioneers of Virology & Discoveries. Theories of viral evolution.	4 Hrs
Unit 2: Nomenclature & Classification	
Rules for Nomenclature, Concept of Central Dogma & Baltimore Classification of Viruses.	4 Hrs
Unit 3: Incomplete/Subviral Agents	
Viroids, Satellite viruses (Hepatitis Delta virus), Prions & Kuru disease	3 Hrs
Unit 4: Transmission of Viruses	
How are viruses transmitted? Modes of disease transmission - Vector, Contact modes etc.,	5 Hrs
Unit 5: Cultivation and Detection	
Methods for Cultivation - Embryonated eggs, Cell lines, Lab hosts. Detection - Molecular tests and Immunological tests, Electron Microscopy	5 Hrs
Unit 6: Virus Replication	
How does viruses infect, multiply in cells and survive? - HIV and SARS CoV2 Narratives.	4 Hrs
Unit 7: Applied Virology	
Viruses as Biopesticides, Viruses as Nanoparticles, Viruses in Biowarfare - A boon or bane?	4 Hrs
Unit 8: Applications in therapy	
Bacterial viruses in therapy, Viruses and Genetherapy	5 Hrs
Unit 9: Virus vaccines	

Vaccines - History, stories of success and failures, Antiviral drugs & implications	4 Hrs
Unit 10: Developing resistance to Virus infections	
DNA vaccines, Plant virus transgenics & cases studies.	4 Hrs

References

1. Carter, J., Saunders, V. and Saunders, V.A., 2007. *Virology: principles and applications*. John Wiley & Sons.
2. Biswas, S.B. and Biswas, A., 1989. *An introduction to viruses*. Vikas publishing house.
3. Burrell, C.J., Howard, C.R. and Murphy, F.A., 2016. *Fenner and White's medical virology*. Academic Press.
4. Flint, S.J., Racaniello, V.R., Rall, G.F., Hatzioannou, T. and Skalka, A.M., 2020. *Principles of virology, Volume 1 & 2: Molecular Biology and Pathogenesis, Control of Animal Viruses*. John Wiley & Sons.