



**Indian Institute of Science Education and Research
(IISER) Tirupati**

BIO329/629: Pandemics: Disease & Intervention

Schedule of lectures § (Total-20 contact hours / lectures)

Date (2020)	L# -Topic of Lecture	Instructor name	Highlights of each lecture with topics
24. 4. (Fri) 4-5 PM	L1. Introduction	BJ	Introduction- Difference between endemic, epidemic, and pandemic, Criteria for infections to be called as pandemic, Role of human and environmental factors for infection to become pandemic etc.
25. 4. (Sat) 3-4 PM	L2. History	BJ	History & Origins of pandemic diseases (old and new world); How pandemics that changed human history etc.
1. 5. (Fri) 4-5 PM	L3	SG	Pandemics by bacteria: plague and cholera
2. 5. (Sat) 3-4 PM	L4	SG	HIV, Nipah, Ebola, Zika
8. 5. (Fri) 4-5 PM	L5	SG	Spanish flu, H1N1, Coronavirus
9. 5. (Sat) 3-4 PM	L6	AS	Introduction about viruses. Anatomy of a Virus. Special focus on SARS-CoV-2 (Covid-19) structure.
15. 5. (Fri) 4-5 PM	L7	AS	Function of different macromolecules involved. Biomarkers for detection.
16. 5. (Sat) 3-4 PM	L8	AS	Different detection strategies currently in use. New detection technologies in progress or at research stage.
22. 5. (Fri) 4-5 PM	L9	AS	Case study: CRISPR-based new diagnostics for Covid-19 detection
23. 5. (Sat) 3-4 PM	L10	SB	Metabolomics and proteomics in the biomarker discovery for pandemic diseases

			Mass spectrometric approach to develop diagnostics
29. 5. (Fri) 4-5 PM	L11	SB	Implications of biomarkers for risk stratification and therapeutic modulation on infectious diseases
30. 5. (Sat) 3-4 PM	L12	RM	Infection cycle of a pathogen, transmission of pathogen (SARS-CoV-2, HIV, Mtb)
5. 6. (Fri) 4-5 PM	L13	GL	Statistical modelling and social networks based models for studying pandemics.
6. 6. (Sat) 3-4 PM	L14	RM	Management of pandemics - National Epidemic disease act of 1897, WHO and ICMR guidelines and social methods: Testing, quarantine, contact tracing, lockdown.
12. 6. (Fri) 4-5 PM	L15	RV	Clinical management through (a) Designing of effective drugs - stages of drug intervention - viral genome replication versus entry versus protein-protein interaction based drug discovery strategies.
13. 6. (Sat) 3-4 PM	L16	RV	Clinical management through (b) Repurposing of existing antivirals - Remdesavir case study. General features of nucleoside-based drugs targeting viral replication pathways.
19. 6. (Fri) 4-5 PM	L17	RV	Clinical management through (c) Protease inhibitors (and other peptidomimetics) as novel drug candidates against COVID-19. New Synthetic methods for antivirals, Process automation and scale up.
20. 6. (Sat) 3-4 PM	L18	RV	Comparison of favourable drug properties - ADME, toxicity. Drug delivery and Sustainable manufacturing.
26. 6. (Fri) 4-5 PM	L19	SG	Vaccine efforts: role of animal models
27. 6. (Sat) 3-4 PM	L20	SG	Development of vaccines

[§] Schedule may be subject to minor changes in exact hours of lectures. Days of the lectures remain the same as listed.