

Title of the Course: MEDICAL MICROBIOLOGY AND EPIDEMIOLOGY [T]

Course Code: MIC-627

Number of Credits: 3, Theory

Contact hours: 45

Effective from Academic Year: 2022-23

Prerequisites	Knowledge of microorganisms, pathogens and various infectious diseases.	
Objective:	<ul style="list-style-type: none"> To understand the mechanism of pathogenesis leading to development of disease in the host. To relate the pathogen, host and environment in terms of its varied existence and interactions, leading to various epidemiological events. 	
Content:		
1.		
1.1	Pathogenicity, virulence and virulence factor – historical perspective and definitions, course of infectious diseases, damage-response curve and classes of pathogen, growth of pathogen in host.	(05)
1.2	Pili, flagella, biofilm, quorum-sensing, iron scavenging, aggressins/impedins against host defence.	(03)
1.3	Host susceptibility, pre-disposing factor (nutritional, socio-economical, occupational, therapy, genetical), factors affecting immune systems; Receptors for pathogen – GalNacbeta1-4 gal moiety exposed on asialylated glycolipids, TLRs, regulation of host cell apoptosis; establishment of latent infection; TB, Streptococcal Pneumonia, Amoebic and Bacillary dysentery.	(07)
2.		
2.1	Exotoxins – Type III secretion system, AB – type toxins, examples (Tetanospasmin, diphtheria toxin, pertusis toxin), bifunctional toxins, cytotoxins and cytolysins. Endotoxin – structure, biosynthesis, assay, pathophysiological effects, excessive inflammatory response, endotoxin neutralizing compound, antagonists of LPS.	(08)
2.2	Diagnostics – Sample type and handling of samples, selective enrichment, classical methods (review) of culturing and identification of pathogens, staining methods for demonstration of pathogen in situ (direct staining, fluorescent antibody staining), Applications of Molecular diagnosis and Typing: LPS (chemotyping), phage, pyocin, antimicrobial, serotyping, Restriction mapping, RFLP, PFGE, PCR.	(03)
2.3	Cystic fibrosis, Spongiform encephalopathy.	(04)
3.		
3.1	Spatial, temporal and social distributions of communicable	(09)

	diseases, transmissibility of infections, cross-sectional studies, case-control studies, cohort studies, Models for Developing Epidemiological Theory, modeling tools, Rates and risks, Population dynamics, Epidemiological Statistics Relating Exposure and Disease, Simple Epidemic Processes, Vaccine effect measures, Multistage chronic diseases, Joint effects of multiple exposure variables.	
3.2	Community acquired infection, infections in immuno-compromised patients, Nosocomial infections, catheter associated infections, infections in patients with debilitating diseases, neo-natal infections; Vector borne diseases – vectors for transmission of infectious diseases, epidemiological cycles of vector borne diseases, control measures.	(06)
Pedagogy:	Lectures/tutorials/assignments/Moodle/videos/web resources	
References/ Readings	Centers for Disease Control and Prevention, Department of Health & Human Services, USA https://www.cdc.gov/ Chakraborty, P. and Pal, N.K., Manual of Practical Microbiology and Parasitology. New Central Book Agency, India. (2018) Chakraborty, P. Textbook of Medical Parasitology. New Central Book Agency, India (2016) Davis, B.D. et al., Microbiology. Harper and Row. (1972) Gillespie, S.H. and Hawkey, P.M., Principles and Practice of Clinical Bacteriology. Wiley. (2006) National Centre for Disease Control, Ministry of Health & Family welfare, GOI https://ncdc.gov.in/ Online Tuberculosis Information System (OTIS) Data, Centers for Disease Control and Prevention, Department of Health & Human Services, USA https://wonder.cdc.gov/tb.html Parija, SC, Textbook of Microbiology & Immunology. Elsevier Health Sciences. (2016) Rafi, MD, Textbook of biochemistry for Medical Students, Universities Press, India (2020) Riedel, S., Hobden, J.A. , Miller, S., Morse, S.A., Mietzner, T.A. et al. Jawetz, Melnick, & Adelberg's Medical Microbiology, McGraw-Hill Education. (2019). Struthers, J.K. and Westran, R.P., Clinical Bacteriology. CRC Press. (2003) Topley, W.W.C., Wilson, G.S., Parker, M.T., & Collier, L.H. , Topley and Wilson's Principles of Bacteriology, Virology and Immunity: v. 1-4, Hodder Arnold (1990) World Health organization, South-East Asia https://www.who.int/southeastasia	
Course Outcomes	<ul style="list-style-type: none"> ● To identify the various virulence and pathogenicity factors of microbial pathogens. ● To correlate the various pathological events during the progression of an infectious disease. ● To apply the various diagnostics techniques involved in 	

	<p>identification of pathogenic agent.</p> <ul style="list-style-type: none">• To categorize the strategies/methods required to combat the spread of pathogens under various circumstances.	
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Paper code: MIC 627 Paper name: **Medical Microbiology and Epidemiology [T]**

Paper offered by: **Microbiology Programme**, School of Biological Sciences and Biotechnology

Students from other disciplines opting for the paper

	Seat No
M.Sc. Zoology	22P0440005
	22P0440007
	22P0440009
	22P0440013
	22P0440022
	22P0440031
	22P0440037
M.Sc. Botany	22P0480003
	22P0480010
	22P0480020
	22P0480029
M.Sc. Biotechnology	22P0470004
	22P0470010
	22P0470011
	22P0470012
	22P0470014
	22P0470016
	22P0470017
	22P0470019
	22P0470020
	22P0470021
	22P0470024
M.Sc. Marine Biotechnology	22P0500001
	22P0500004
	22P0500007
M.A. English	22P0110039

M.SC. MICROBIOLOGY
Academic year 2023-2024
Schedule for M.Sc. Microbiology Part II Semester III(w.e.f 16/06/2023)

Time	10:00 – 12:00	12.30-13.30	13.30-14.30	14.30-15.30	15.30-16.30	16.30-17.30
Mon	Practical (Batch 1 and Batch 2)	MIC-623 Genetic Engineering [T] [JN] / MIC-622 Pharmaceutical Microbiology [T] [CF]	13.30-14.30	MIC-623 Genetic Engineering [T] [JN] / MIC-622 Pharmaceutical Microbiology [T] [CF]	MIC-603 Extremophilic Microorganisms [BS]	
Tue	Practical (Batch 1 and Batch 2)	MIC-603 Extremophilic Microorganisms [T] [BS]	L U N C H	MIC-600 Research Methodology and Advanced Biostatistics [T] [SG]	MIC-605 Aquatic Virology [T] / [JN] MIC-629 Marine Microbiology [T] [CF]	
Wed	Practical (Batch 1 and Batch 2)	Dissertation / mentor-mentee session	B R E A K	MIC-625 Food Microbiology [T] [LC]	MIC-623 Genetic Engineering [T] [JN] / MIC-622 Pharmaceutical Microbiology [T] [CF]	
Thu	Practical (Batch 1 and Batch 2)	Dissertation		MIC-627 Medical Microbiology and Epidemiology [T] [JN]	MIC-625 Food Microbiology [T] [LC]	
Fri	Practical (Batch 1 and Batch 2)	MIC-605 Aquatic Virology [T] / [JN] MIC-629 Marine Microbiology [T] [CF]		MIC-627 Medical Microbiology and Epidemiology [T] [JN]	MIC-600 Research Methodology and Advanced Biostatistics [T] [SG]	

- SG=Sandeep Garg; LC=Lakshangy Charya; BS=Bhakti Salgaonkar; MN=Milind Naik; JN=Judith Noronha; CF=Contract faculty
- Classes for MIC-623 and MIC-605 will be conducted in Classroom 2. Classes for MIC-622 and MIC-629 will be conducted in Classroom 3.
- MIC-632, MIC-633 and MIC-634 (Field trips) will be conducted depending on permission received from respective institutes / industries.
- The practical schedule will be issued separately.



Dr. Lakshangy Charya
Programme Director, Microbiology
SBSB



Prof. S.C. Ghadi
Vice-Dean (Academic), SBSB


Prof. Savita Kerkar
Dean, SBSB

SCHOOL Medical Microbiology
 COURSES 03 Epidemiology
 (Code)

GOA UNIVERSITY

ATTENDANCE SHEET

Teacher's Name _____

Programme Name : _____
 Academic Year 2023-24
 Semester III
 Total number of lectures delivered by the teacher during the Semester 17

Sl.No.	Name of the Students	Date of Lectures																	Total
		16/6/23	22/6/23	29/6/23	7/7/23	13/7/23	14/7/23	20/7/23	27/7/23	3/8/23	10/8/23	17/8/23	24/8/23	31/8/23	7/9/23	14/9/23	21/9/23	28/9/23	
21.	Anishka. Khandeparkai.	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	17
22.	Chhaya A. Singh	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	17
24.	Gayatri M. Fernandes	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	17
25	Dialla Fernandes	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	17
26	Mayuri Velutkar	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	17
27	Ashrada A. Pitthru Desai	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	17
26	Naishwami Sakti.	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	17
27	Saija Shrivastav	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	17
28	Tanmay Nik Desai	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	17
29	Corissa Noemia De Sa	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	17
29	SABANA R G	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	17
20	Eren Desoza	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	17
31	Savvasi Dandekar	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	17
	Rudali Kausarvarkar	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	17
	Diptinwoly	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	17
32	Sudh Aisvith	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	17
	Mahi in Biotannology	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	17
33	Akash Rajwan	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	17
34.	Georalb Dutta	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	17
35.	Aarjun Stockmayer	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	17
	Signature of the Teacher																		
	Signature of the Programme Director / Vice Dean / Dean																		
NOTE: (a) The students shall put their signatures against their respective names at every lecture / class																			

(25)

No. of lecturers	Name of the Stu	Teacher's Name	Date of Lectures	Time of Lectures	No. of lectures delivered	Grade	Attendance	Remarks
1	Abhishek		24/8/23	25/8/23	2	1	2	2
2	Haroon		25/8/23	26/8/23	2	2	2	2
3	Deepshika		27/9/23	14/10/23	2	2	2	2
4	Divyanshu							
5	Edwin							
6	Sankha							
7	Angela							
8	Arjun							
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42	Arjun							

Signature of the Teacher
 Signature of the Programme Director / Vice Dean / Dean

NOTE: (a) The students shall put their signatures against their respective names at every lecture class