Lesson Plan

Name of the Faculty : Sh. Bipul Kumar Mahto

Discipline : Medical Lab Technology

Year : 1st SEM

Subject : BASIC MICROBIOLOGY-I

Lesson Plan : 15 weeks

Work load (lecture/practical) per week (in hours) : Lectures-03, practicals-04

Week	Theory			Practical	
	Lecture day	Date	Topic (including assignment test)	Practical Day (2 hours lab each day), (2 hours each day*2 days in week=4 weekly load)	Topic
1st	1st		Definition, history, relationship of microorganisms to man.		Demonstration of safety rules (Universal precautions) in a microbiology laboratory.
	2nd		Safety guideline in a microbiology laboratory. Universal precautions		
	3rd		Bio-safety cabinets: principle, types of bio-safety cabinets and their applications.		
2nd	4th		i. Classification of micro-organisms		Preparation of cleaning agents and techniques o cleaning glasswares.
	5th		ii. Morphology of Bacteria		
	6th		iii. Bacterial cell wall		
3rd	7th		iv. Cell wall structures		Preparation of materials for sterilization in an autoclave and hot air oven.
	8th		v. Physiology of bacteria		
	9th		vi. Bacterial growth and nutrition		
4th	10th		**Sterilization- definition and types of sterilization.** i. Physical methods of sterilization: Equipments used for sterilization, operation of autoclave and hot air oven, sterilization control and sterilization indicators. Sterilization by radiation and filtration (membrane).		Sterilization in autoclave and hot air oven and placing of the sterilization indicators.
	11th				
	12th				
5th	13th		Chemical methods of Sterilization: Antiseptics and disinfectants- Definition, types, properties and uses of common disinfectants and disinfectants (e.g. Formaldehyde, Ethylene oxide, phenol compounds, Alcohol, hypochlorite). Definition of Phenol coefficient and determination Phenol coefficient by Rideal Walker method.		Sterilization by filtration by membrane method.
	14th				
	15th				

6th	16th		**Microscopy and staining techniques** i. Handling of a compound microscope. Care and maintenance of different parts of a compound microscope. Principle of working of fluorescent microscope.		Handling and care of different types of microscopes.
	17th				
	18th				
7th	19th		ii. Staining techniques: Method of smear preparation. Differential staining methods: Gram staining, AFB staining, Albert's staining, staining of capsule. Preparation of staining solutions and their storage.		Staining techniques: Gram, Albert's staining, ZiehlNeelsonstaining, Capsule and bacterial spore staining.
	20th				
	21st				
8th	22nd		**Culture Media and culture techniques** i. Definition, synthetic and non-synthetic media. Types of culture media: liquid, and solid media, routine laboratory media (Basal. Enriched, selective, enrichment, indicator, transport, and storage) with two examples of each type.		Demonstration of bacterial motility by hanging drop technique.
	23rd				
	24th				
9th	25th		ii. Different types of inoculating loops, different types of swabs and their uses. Types of bacterial culture: broth culture, stab culture, slant culture. Culture techniques: streak plate, pour plate, spreading/ lawn culture, .Aerobic and anaerobic culture, Isolation of pure cultures and disposal of cultures.		Preparation of culture media: Nutrient agar, blood agar, chocolate agar, MacConkey agar, DCA, XLD and Peptone water. Inoculation of bacteria on these culture media by aerobic / anaerobic culture method.
	26th				
	27th				
10th	28th		REVISION		Isolation of organisms in pure culture, study of colony characteristics and demonstration of haemolysis on blood agar.
	29th		REVISION		
	30th		REVISION		
11th	31st		REVISION		REVISION
	32nd		REVISION		
	33rd		REVISION		
12th	34th		REVISION		REVISION
	35th		REVISION		
	36th		REVISION		
13th	37th		REVISION		REVISION
	38th		REVISION		
	39th		REVISION		
14th	40th		REVISION		REVISION
	41st		REVISION		
	42nd		REVISION		
15th	43rd		REVISION		REVISION
	44th		REVISION		
	45th		REVISION		