## UNIVERSITY OF MUMBAI



Revised Syllabus for S.Y.B.Sc.

Program: B.Sc.

Course: MICROBIOLOGY (USMB)

(Choice Based Credit System with effect from the Academic year 2017-18)

till date



I/C Incipal

G.E Society's N. 8 Mehta Sci. College Bordi

Ability Enhancement Course I (FC I) Societal Awareness

The Indian Constitution and Significant Aspects of Political Processes I carning Outcome. To impair knowledge of Society and make students aware about the Problems in Society Overview of Indian Society Concept of Disparity Course Objective: To aquaint the students with concepts of Societal Awarness Unit III COURSE CODE Unit II USBT 107 ( mit I inclusive politics; Role and significance of women and 74th Amendments and their implications for government in urban and rural areas; the 73rd The party system in Indian politics; Local self-Significant Aspects of Political Processes Indian society; Basic features of the Constitution crucial values in strengthening the social fabric of tolerance, peace and communal harmony as Fundamental Duties of the Indian Citizen; Preamble, Preamble. The structure of the Constitution-the Philosophy of the Constitution as set out in the The Indian Constitution system and inter-group conflicts arising thereof; Examine inequalities manifested due to the caste Concept of Disparity-II special reference to violence against women, temale foeticide (declining sex ratio), and portrayal of women in media; Appreciate the understand the issues of people with physical and mequalities faced by people with disabilities and annunalism: Examine the causes and effects of Explore the disparities arising out of gender with iderstand inter-group conflicts arising out of of stratification and inequality: Understand the concept of disparity as arising out ulucts arising out of regionalism and linguistic Concept of Disparity-1 characteristics. Understanding the concept of diversity as difference caste, and gender. Appreciate the concept of Population distribution according to religion, Justine linguistic diversity in relation to the Indian society through its demographic composition: Understand the multi-cultural diversity of Indian Main Body Understand E.m. 37.11 urban and regional Schedules; variations 15 lectures 15 Lectures 15 Lectures CREDITS | Notional 30 hrs 30 hrs 30 hrs Hours

14/

Topics for Project Guidance: Growing Social Problems in India:

HIV AIDS- awareness, presention, treatment and services Substance abuse-impact on routh & challenges for the fature

Problems of the elderly-causes, implications and response

Issue of child labour-magnitude, causes, effects and response

Child abuse-effects and ways to prevent

Trufficking of women-causes, effects



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## SEMESTER II

COURSE CODE Ability Enhancement Course 2 (FC II) Globalization, Ecology and Sustainable Development

	bi	Tupites für Project Guildunce: Growine Surial Problems in India.  Tupites für Project Guildunce: Growing Surial Problems in India.	Topics for Project Guidance
		Managing Stress and Conflict in Society Types of conflicts and use of coping mechanisms for managing individual stress; Maslow's theory of self-actualisation; Different methods of responding to conflict in society. Conflict	
30 hrs	15 lectures	Understanding Stress and Conflict Causes of stress and conflict in individuals and society, Agents of socialization and the role played by them in developing the individual; Significance of values, ethics and prejudices in developing individual; Stereotyping and prejudice as significant factors in causing conflicts in society, Aggression and violence as the public expression of conflict	Unit III Understanding and Managing Stress and Conflict in Contemporary Society
30 hrs	15 Lectures	Ecologyand Sustainbale Development Importance of Environment Studies in the current developmental context; Understanding concepts of Environment, Ecology and their interconnectedness; Environment as natural capital and connection to quality of human life; Environmental Degradation causes and impact on human life; Sustainable development, concept and components; poverty and environment	Unit II Ecology and Sustainbale Development
30 hrs	15 Lectures	concepts of liberalization, privatization and globalization, Growth of information technology and communication and its impact manifested in everyday life, Impact of globalization on industry: changes in employment and increasing migration; changes in agrarian sector due to globalization; rise in corporate farming and increase in farmers' Human Rights.  Concept of Human Rights, origin and evolution of the concept, The Universal Declaration of Human Rights. Human Rights constituents with special reference to Fundamental Rights stated in the Constitution	Unit I Globalisation and Indian Society and Human Rights
y	nment blems in Societ	Learning Ontenne To impart knowledge of Globalization make students aware about the Problems in Societ  Globalisation and India Co.	Learning Outcome To impart kno
	2	Development	Course Ohtania
Notional Hours	CREDITS	$\vdash$	USBT 207

r inject outdance: Growing Social Problems in India:

Increasing urbanization, problems of housing, health and sanitation,

Changing lifestyles and impact on culture

Farmers' suicides and agrarian distress

Debate regarding Genetically Modified Crops

Development projects and Harren Rights violations

Increasing crime/suicide MEHTA

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Internal	Evaluation System Theory Examination 21/2	Hours	Credits	Periods per week (1 Period is 50 minutes)		B. Sc (Information Technology) Semeste
25	75	irs Marks	2	s,	Course Code: USIT105	Semester - I

< <b>-</b>	7	E	=	-	Cinit
Presentation Process: Planning the presentations, executing the presentations. Impressing the audience by performing, Planning stage: Brainstorming, mind maps / concept maps, executing stage: chunking theory, creating outlines, Use of templates. Adding graphics to your presentation: Visual communication, Impress stage: use of font, colour, lavour Importance of practice and performance.	Understanding Specific Communication Needs: Corporate Communication, Persuasive Strategies in Business Communication, Ethics in Business Communication, Business Communication Aids	Developing Oral Communication Skills for Business:  Meetings and Conferences, Group Discussions and Team Presentations, Team Briefing.  Understanding Specific Communication Needs:  Communication across Functional Areas	Writing Business Messages and Documents: Business writing. Business Correspondence, Instructions Business Reports and Proposals, Career building and Resume writing. Developing Oral Communication Skills for Business: Effective Listening. Business Presentations and Public Speaking, Conversations. Interviews	The Seven Cs of Effective Communication: Completeness, Conciseness, Consideration, Concreteness, Clarity, Courtesy, Correctness Understanding Business Communication: Nature and Scope of Communication, Non-verbal Communication, Cross-cultural communication, Technology-erabled Business Communication	+
12	12	12	12	12	Lectures

Books a	Books and References:				
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	<b>Business Communication</b>	Edited by	Oxford	Second	
	The second secon	Meenakshi	University		
		Raman and	Press		
		Prakash Singh			
2.	Professional	Aruna Koneru	Tata		
	Communication		McGraw		
			HH		



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Semester -
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Changing the Way of Work:  Old Behaviours, starting at the Top, Process Reengineering with Green in Mind, Analysing the Global Impact of Local Actions, Steps: Water, Recycling, Energy, Pollutants, Teleworkers and Outsourcing, Telecommuting, Outsourcing, how to Outsource.  Going Paperless:  Paper Problems, The Environment, Costs: Paper and Office, Practicality, Storage, Destruction, Going Paperless, Organizational Realities, Changing Over, Paperless Billing, Handheld Computers vs. the Clipboard, Unified Communications, Intranets, What to Include, Building an Intranet, Microsoft Office SharePoint Server 2007, Electronic Data Interchange (EDI), Nuts and Bolts, Value Added Networks, Advantages, Obstacles.	Minimizing Power Usage: Power Problems, Monitoring Power Usage, Servers, Low-Cost Options, Reducing Power Use, Data De-Duplication, Virtualization, Management, Bigger Drives, Involving the Utility Company, Low-Power Computers, PCs, Linux, Components, Servers, Computer Settings, Storage, Monitors, Power Supplies, Wireless Devices, Software.  Cooling: Cooling: Cooling Costs, Power Cost, Causes of Cost, Calculating Cooling Needs, Reducing Cooling Costs, Economizers, On-Demand Cooling, Needs, Reducing Cooling Airflow, Hot Aisle/Cold Aisle, Raised Floors, Cable Management, Vapour Seal, Prevent Recirculation of Equipment Exhaust, Supply Air Directly to Heat Sources, Fans, Datacentre Design, Centralized Control, Design for Your Needs, Put Everything Together.	Convervew and Issues:  Overview and Issues:  Problems: Toxins, Power Consumption, Equipment Disposal, Problems: Toxins, Power Consumption, Equipment Disposal, Company's Carbon Footprint: Measuring, Details, reasons to bother, Plan for the Future, Cost Savings: Hardware, Power.  Initiatives and Standards:  Global Initiatives: United Nations, Basel Action Network, Basel Convention, North America: The United States, Canada, Australia, Europe, WEEE Directive, RoHS, National Adoption, Asia: Japan, China, Korea.	Details
12	12	12	Lectures

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IV	Recycling:	
	Problems, China, Africa, Materials, Means of Disposal, Recycling, Refurbishing, Make the Decision, Life Cycle, from beginning to end, Life, Cost, Green Design, Recycling Companies, Finding the Best One, Checklist, Certifications, Hard Drive Recycling, Consequences, cleaning a Hard Drive, Pros and cons of each method, CDs and DVDs, good and bad about CD and DVDs disposal, Change the mind-set, David vs. America Online  Hardware Considerations: Certification Programs, EPEAT, RoHS, Energy Star, Computers, Monitors, Printers, Scanners, All-in-Ones, Thin Clients, Servers, Blade Servers, Consolidation, Products, Hardware Considerations, Planned Obsolescence, Packaging, Toxins, Other Factors, Remote Desktop,	12
V	Using Remote Desktop, Establishing a Connection, In Practice  Greening Your Information Systems: Initial Improvement Calculations, Selecting Metrics, Tracking Progress, Change Business Processes, Customer Interaction, Paper Reduction, Green Supply Chain, Improve Technology Infrastructure, Reduce PCs and Servers, Shared Services, Hardware Costs, Cooling.  Staying Green: Organizational Check-ups, Chief Green Officer, Evolution, Sell the CEO, SMART Goals, Equipment Check-ups, Gather Data, Tracking the data, Baseline Data, Benchmarking, Analyse Data, Conduct Audits, Certifications, Benefits, Realities, Helpful Organizations.	12

Books a	nd References:				
Sr. No.	Title	Author/s	Publisher	Edition	Year
<u>1.</u>	Green IT	Toby Velte, Anthony Velte, Robert Elsenpeter	McGraw Hill		2008
2.	Green Data Center: Steps for the Journey	Alvin Galea, Michael Schaefer, Mike Ebbers	Shroff Publishers and Distributers		2011
3.	Green Computing and Green IT Best Practice	Jason Harris	Emereo		
4.	Green Computing Tools and Techniques for Saving Energy, Money and Resources	Bud E. Smith	CRC Press		2014



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## S.Y.B.Sc Microbiology Syllabus (General Outline) Revised for Choice Based Credit System To be implemented from the Academic year 2017-18 Semester III

	(saintai ct		
ယ	1 Credit	(Practicals Based On Unit-I,II & III Of USMB-303 Option B)	Option
ω	1 Credit (45 lectures)	(Practicals Based On Unit-II & III Of USMB-303 Option A)  Option R: Basic and Advanced Programme (Practicals Based On Unit-III & III Of USMB-303 Option A)	Any One
ω.	-	Option A: Introduction to Clinical III Of USMB-302	SECTIONS
	(45 lectures)	Environmental Microbiology	SECTION-2
w	1 Credit	(Practicals Based On Unit-) II & III Of Lights 202	27
ဖ	3 Credits	Biomolecules and Microbial town	SECTION-1
		PRACTICALS	USMBP-3
_	15 lectures,	echiology and Bioinformatics	
<u>ا</u>	15 lectures	Basic r ONL Cost agents for Microbial Control	Unit-III
	15 lectures.	Physical and phemion of	Unit-II
ω	(45 lectures)	Basics of Microbiology	Unit-I
	2 Credits	Basic and Advanced Microbiology	Option B
		OR	USMB-303
-	15 lectures.	Microbiology	
_	i o lectures.	Control of Microorganisms & Safety in Clinical	Onit-III
-	16 100	public health awareness, Epidemiology and	
<u>.</u>	15 lectures.	Common infectious diseases End	Unit-II
٥	(45 lectures)	Basic Microbiology	Unit-I
3	2 Credits	Introduction to Clinical Microbiology	Theory
		3	0010-003
-	15 lectures.		I OMO
-)-	15 lectures.	Soil and Geo Microbiology	III-Juno
•	15 lectures.	Fresh Water & Sewage Microbiol	Unit-II
ß	(45 lectures)	Air Microbiology .	Unit-
	2 Cradite	Environmental Microbiology	Theory
_	15 lectures		USMB-302
-	15 lectures.	Microbial Taxonomy	Cinical
-	15 lectures	Nucleic acid structure and chemistry	llnit-lll
ω	(45 lectures)	Estimation of Biomolecules	Cinca Cinca
Week	2 Credits		Theory
Lectures /	Credits	301	USMB-301
		Course Code Title	Cour
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Aerosols, nature of bioaerosols, aeromicrobiology   7 L]: Important airborne pathogens and toxins. Aerosols, nature of bioaerosols, aeromicrobiological aeromicrobiology, intramural aeromicrobiology   15. Sampling Devices for the Collection of Air Samples. Note that the control of microorganisms on fomites   31 L   1 L	Whole genome serjuence analysis - Whole genome serjuence analysis - 3f. Phylogenetic tree: Types [1 L]  Environmental Microbiology  Unit I: Air Microbiology  1a. Aeromicrobiology [7 L]: Important airborne pathogens and toxins, Aerosols, nature of bioaerosols, aeromicrobiological pathway, microbial survival in the air, extramural aeromicrobiology, intramural aeromicrobiology  1b. Sampling Devices for the Collection of Air Samples, Detection of microorganisms on fomites [3L] 1, 1-10. Air Sanitation [2L] 3.1.  1c. Air Sanitation [2L] 3.1.  1d. Air Quality Standards: [3L] 2.1. 1.1.	Whole genome serjuence analysis - Whole genome serjuence analysis - 3f. 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Fresh water environments and micro-organisms found in Springs, rivers and streams, Lakes, Potable water: Definition, water purification, water [2L]  2b. Potable water: Definition, water purification, water [2L]  2c. Microbiological analysis of water: [21] Indicator organisms and their detection in water-otal Coliforms, Facal Coliforms and E. coli, Fecal Streptococci, Clostridium perfringens	Whole genome sequence analysis  2f. Phylogenetic tree: Types [1 L]  Environmental Microbiology  Litt: Air Microbiology  1a. Aeromicrobiology [7 L]: Important airborne pathogens and toxins, Aerosols, nature of bioaerosols, aeromicrobiology, intramural aeromicrobiology, intramural aeromicrobiology  1b. Sampling Devices for the Collection of Air Samples, National aeromicrobiology, intramural aeromicrobiology  1c. Air Sanitation [2L] 3.1.  1d. Air Cuality Standards: [3L] 2.1.  1d. Air Sanitation [2L] 3.2.  1d. Air Sanitation [2L] 3.1.  2a. 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DNA-DNA hybridization DNA profiling DNA profiling Multilocus sequence analysis G+C ratio Genetic finger printing Amino acid sequencing [1L] Phylogenetic analysis [3 L] Nucleic acid sequencing Analysis of individual genes	Cart failo Genetilo finger printing Amino acid sequencing [11.] Phylogenetic analysis [3.L] Nucleic acid sequencing Analysis of individual genes	Phylogenetic analysis (3 L) Nucleic acid sequencing Analysis of individual genes Multiple		Environmental Microbiology 2 Unit I: Air Microbiology	Environmental Microbiology  Unit I: Air Microbiology  1a. Aeromicrobiology [7 L]: Important airborne pathogens and toxins, Aerosols, nature of bioaerosols, aeromicrobiology intermired pathway, microbial survival in the air, extramural aeromicrobiology intermired pathway.	Environmental Microbiology  Unit I: Air Microbiology  1a. 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DNA-DNA hybridization DNA profiling DNA profiling Multilocus sequence analysis G+C ratio Genetic finger printing Amino acid sequencing [11.] Pre Phylogenetic analysis [3 L] Nucleic acid sequencing Analysis of individual genes Multilocus gene sequence analysis - Whole genome sequence analysis - Whole genome sequence analysis	Amino acid sequencing [11.]  Pre Phylogenetic analysis [3 L]  Nucleic acid sequencing [11.]  Pro Nucleic acid sequencing Analysis of individual genes  Multifocus gene sequence analysis .  Whole genome sequence analysis .  Whole genome sequence analysis .  Phylogenetic feer Trace (1.2)	Problems and sequencing [11] Problems and sequencing [11] Problems and sequencing Analysis of individual genes Multifocus gene sequence analysis .  Whole genome sequence analysis .  Phylogenetic free: True [1]	Pro llysis - Br lysis	Environmental Microbiology 2 Unit I: Air Microbiology	Unit I: Air Microbiology  15  1a. 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	Bioremediation Introduction Principle of Bioremediation:- Factors of Bioremediation:- Microbial Populations for Bioremediation processes Bioremediation strategies:- Advantages & Disadvantages of Bioremediation:		Bioremediation: Features, Strategies and applications, Shilpi Sharma.  Asian Journal of Pharmacy and Life Science ISSN 2231 – 4423,Vol. 2 (2), April-June, 2012.Available online on www.ajpls.com Review Article Prescott and Harley 1075-79  Bioremediation - An Overview Jr. of Industrial Pollution Control 27(2)(2011) pp 161-168, V. Mary Kensa



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