



SMT N P S GOVT COLLEGE (W), CHITTOOR



DEPARTMENT OF MICROBIOLOGY

B.Sc.,

(Revised on 2021-2022)

COURSE OUTCOMES

Name of the programme: B.Sc

Name of the specific group: MZC

Semester: I

Code	Course title	Course Type	HPW	Credits
MIC -101	Introduction To Microbiology And Microbial Diversity	Core	4	4

CO.No	Expected Course Outcomes	Cognitive Level
	Upon completion of this course, the students will be able to:	
1	Understand the discipline of Microbiology and the contributions made by prominent scientists in this field.	U
2	Understand the basic microbial structure and function and study the comparative characteristics of prokaryotes and eukaryotes and also Understand the structural similarities and differences among various physiological groups of Microorganisms	U
3	Master aseptic techniques and be able to perform routine microscopy and culture handling tasks safely and effectively	AP
4	Understand the characteristics of different types of microorganisms, classify these into.	U
5	Describe various Culture media and their applications and also understand various physical and chemical means of sterilization	C
6	Comprehend the various methods for identification of unknown microorganisms	Com

Name of the programme: B.Sc

Name of the specific group: MZC

Semester: II

Code	Course title	Course Type	HPW	Credits
MIC -201	Microbial Biochemistry & Metabolism	Core	4	4

COURSE OUTCOMES:

CO. No.	Expected Course Outcomes	Cognitive Level
	Upon completion of this course, the students will be able to:	
1	Describe the nutritional requirements of bacteria for growth; and understanding that besides common bacteria there are several other microbes which grow under extreme environments.	U

2	Describing the growth characteristics of the microorganisms and the associated mechanisms of energy generation of autotrophs, heterotrophs, chemolithoautotrophs etc.	U
3	Differentiating concepts of aerobic and anaerobic respiration and how these are manifested in the form of different metabolic pathways in microorganisms.	Com
4	Explain the structure and properties of carbohydrates, Amino acids, Lipids, Nucleic acids, Enzymes	An
5	Identify and differentiate working principle, instrumentation and applications of various bio-analytical instruments	AP
6	Reproduce and design an experiment with step-by-step instructions to address a research problem or bio-analytical practical	C

Name of the programme: B.Sc

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Semester: III

Title of the paper: Microbial Genetics and Molecular Biology

Code	Course title	Course Type	HPW	Credits
MIC -301	Microbial Genetics and Molecular Biology	Core	4	4

COURSE OUT COMES:

CO.No.	Expected Course Outcomes Upon completion of this course, the students will be able to:	Cognitive Level
1	Remember the terms and terminologies related to molecular biology and microbial genetics	K

2	Describe DNA as a genetic material, enzymology, and replication strategies	U
3	Predict causes of mutation and identify different types of mutation	C
4	Summarize the different in-vivo DNA repair mechanism	U
5	Illustrate recombination process	An
6	Describe the requirements of protein synthesis and its mechanism in prokaryotes	U
7	Handle and independently work on lab protocols involving molecular techniques	AP

Name of the programme: B.Sc

Name of the specific group: MZC

Semester: IV

Title of the paper

SEMESTER-IV: Immunology and Medical Microbiology

Code	Course title	Course Type	HPW	Credits
MIC -401	Immunology and Medical Microbiology	Core	4	4

CO.No.	Expected Course Outcomes Upon completion of this course, the students will be able to:	Cognitive Level
1	Understood the basic components of the immune system and how this system serve to protect the host against disease-causing microbes	U

2	Understand the importance of pathogenic bacteria in human disease and Recall the relationship of this infection to symptoms, relapse and the accompanying pathology.	U
3	Apply immunological laboratory techniques to understand principles of antigen-antibody reaction.	AP
4	Demonstrate gel-Immunodiffusion and Immuno-electrophoresis	U
5	Evaluate laboratory test outcomes and determine the validity of the test results obtained.	E
6	Design a immunological method to improve our understanding of immunology and its relevance to human health and to our society.	C

Name of the programme: B.Sc

Name of the specific group: MZC

Semester: V

Title of the paper: Environmental and agricultural microbiology

Code	Course title	Course Type	HPW	Credits
MIC -501	Environmental and agricultural microbiology	Core	4	3

CO. No.	Expected Course Outcomes Upon completion of this course, the students will be able to:	Cognitive Level
1	Understand the use of microbes in sustainable agriculture namely role in biogeochemical recycling, nitrogen fixing, organic matter degradation, use as bio fertilizers, as bio pesticides, production of biofuels	U

2	Appreciate the diversity of microorganism and microbial communities inhabiting a multitude of habitats and occupying a wide range of ecological habitats	An
3	Evaluate the quality of water, air and soil and control of environmental pollution	E
4	Understand the basic principles of environment microbiology and be able to apply these principles to understanding and solving environmental problems.	U
5	Comprehend the various methods to determine the Sanitary quality of water and sewage treatment methods employed in waste water treatment	C
6	Explain various aspects of environmental microbiology and microbial ecology and to become familiar with current research in environmental microbiology	U

Name of the programme: B.Sc

Name of the specific group: MZC

Semester: VI

Title of the paper: Food and industrial microbiology

Code	Course title	Course Type	HPW	Credits
MIC -502	Food and industrial microbiology	Core	4	3

CO.No.	Expected Course Outcomes Upon completion of this course, the students will be able to:	Cognitive Level
1	Recognize and describe the characteristics of important pathogens and spoilage microorganisms in foods	K
2	Identify ways to control microorganisms in foods and thus know the principles involving various methods of food preservation	An

3	Understanding of practical aspects commercially produced food and fermentative products.	Ap
4	Practical use of microbiology for better production of home based food and fermentation products for day to day use	C
5	Analyze the portability of water	An
6	Evaluate the microbiological quality	E

Name of the programme: B.Sc

Name of the specific group: MZC

Semester: VI

Title of the paper: Microbial diagnosis in health clinics (Core)

Code	Course title	Course Type	HPW	Credits
MIC -601	Microbial diagnosis in health clinics	Core	4	3

CO.No.	Expected Course Outcomes Upon completion of this course, the students will be able to:	Cognitive Level
1	Understand of practical aspects of collection of different clinical samples, their transport, culture and examination by staining, and molecular and immunological diagnostic methods for diagnosis of microbial diseases	U
2	Analyse of practical aspects of antibiotic sensitivity testing, water and food testing skills using kits available in the market.	An

3	Understand preventive measures for human infections by the use of antibiotics and vaccines	U
4	Apply practical aspects diagnosis of common human infections	Ap
5	Assimilate knowledge on identification of bacterial pathogens	C
6	Understand of preventive measures for human infections by the use of antibiotics and vaccines.	U

Name of the programme: B.Sc

Name of the specific group: MZC

Semester: VI

Title of the paper: Microbial biotechnology (CE-1 VIIIA)

Code	Course title	Course Type	HPW	Credits
MIC -602A	Microbial biotechnology	Core	4	3

CO.No.	Expected Course Outcomes Upon completion of this course, the students will be able to:	Cognitive Level
1	To comprehend the basic principles of Microbial Biotechnology [	Comprehension
2	Apply the gene manipulation techniques Knowledge to Micro biota	App
3	Analyze the different applications of genetically modified organisms related issues	An

4,	Understand the Basics of biotechnological production processes	U
5.	Become familiar with methods to analyse and engineer genes for optimal expression	An
6.	Evaluate explicitly, the metabolic pathways, role of microbes in public health; insight into the physical and chemical control of microorganisms.	E

Name of the programme: B.Sc

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Semester: VI

Title of the paper: Microbial quality control in food and pharmaceutical industries (CE2 – VIII B)

Code	Course title	Course Type	HPW	Credits
MIC -602B	Microbial quality control in food and pharmaceutical industries	Core	4	3

CO.No.	Expected Course Outcomes Upon completion of this course, the students will be able to:	Cognitive Level
1	Identify microorganisms of relevance to healthcare and the pharmaceutical industry and their sources	K
2	Discuss Microbial contamination/product spoilage	An
3	Evaluate the sterility testing, microbial assays, pharmacopoeial standards of sterilization process	E

4	Discuss Microbial contamination , product spoilage and antimicrobial preservation of Cosmetic products	An
5	Demonstrate a knowledge and understanding of microbiological assays of growth promoting and growth inhibiting substances	Ap
6	Understand antimicrobial preservation of pharmaceutical formulations during production and in products	U

Name of the programme: B.Sc

CO.No.	Expected Course Outcomes				Cognitive Level
	Upon completion of this course, the students will be able to:				
1	Understand practical aspects of production of bio fertilizers.				U
Code	Course title	Course Type	HPW	Credits	
MIC -602C	Bio-fertilizer & Bio-pesticides	Core	4	3	

Name of the specific group: MZC

Semester:VI

Title of the paper:Bio-fertilizer & Bio-pesticides(CE 3-VIIC)

2	Understand practical aspects of the production of bio pesticides/bio insecticides	U
3	Identify microorganisms of relevance to	K
4	Evaluate the production conditions for production of bio fertilisers and bio pesticides	E
5	Analyse efficacy of various microorganisms as biofertilisers	An
6	Apply the knowledge of application of biofertilisers in field	Ap

