PRINCE SHRI VENKATESHWARA ARTS AND SCIENCE COLLEGE
Gowrivakkam, Chennai-600073.
Affiliated to University of Madras

DEPARTMENT OF MICROBIOLOGY

2018-2019

COURSE OUTCOMES

M. Sc APPLIED MICROBIOLOGY

YEAR/ SEM: I/ I – MDT1A – MICROBIAL TAXONOMY

NO.	COURSE OUTCOME
C101.1	To identify the taxonomy and classification of microorganism.
C101.2	To categorize microorganism on the concepts of Bergey's manual systematic bacteriology.
C101.3	To understand the significance and characteristics of fungi.
C101.4	To outline the characteristics and classification of protozoa.
C101.5	To extend knowledge on the systematic classification of algae.

YEAR/ SEM: I/ I – MDT1B – GENERAL MICROBIOLOGY AND LABORATORY ANIMAL SCIENCE

NO.	COURSE OUTCOME
C102.1	To understand the principles of microscopy, centrifugation and staining techniques.
C102.2	To summarize the anatomy, growth and nutrition of microorganism.
C102.3	To compare and categorize the life cycle of various species of algae.
C102.4	To extend knowledge on the management, breeding and handling of different of laboratory animals.
C102.5	To outline the maintenance and uses of gnotobiotic and transgenic animals.

YEAR/ SEM: I/I – MDT1C - IMMUNOLOGY

NO.	COURSE OUTCOME
C103.1	To extend knowledge on the structure and functions of immune system.
C103.2	To outline the structure and functions of antibody and antigen.

C103.3	To understand the basic principles and methods of immunological techniques.
C103.4	To explain the various mechanisms of immune function.
C103.5	To summarize the principles and types of vaccines.

YEAR/ SEM: I/I – MDTAA – METABOLIC PATHWAYS

NO.	COURSE OUTCOME
C104.1	To understand the basics of enzymes and mechanism of enzyme reaction.
C104.2	To highlight the principles of bioenergetics and electron transport chain.
C104.3	To categorize the metabolism of various biomolecules.
C104.4	To extend knowledge on the lipid metabolism and oxidation of inorganic molecules.
C104.5	To summarize the biosynthesis and interconversions of amino acids.

YEAR/ SEM: I/I – MDTAB – MICROBIAL DIVERSITY

NO.	COURSE OUTCOME
C105.1	To understand the basics of microbial diversity.
C105.2	To outline the classification, habitats and applications of thermophiles and methanogens.
C105.3	To extend knowledge on the classification and applications of halophiles, barophiles, acidophiles and alkalophiles.
C105.4	To summarize the objectives of space microbiology.
C105.5	To highlight the Martian environment and monitoring of astronauts microbial flora.

YEAR/ SEM: I/I – PSSEA – LANGUAGE AND COMMUNICATION ADVANCED LEVEL

NO.	COURSE OUTCOME
C106.1	To revise language skills.
C106.2	To build fluency

C106.3	To learn the principles of LSRW
C106.4	To know to take notes and be aware of one's body languages while communicating
C106.5	To develop and Expand Writing Skills through Controlled and Guided activities

YEAR/ SEM: I/II – MDT11 – PRACTICAL I GENERAL MICROBIOLOGY, PHYSIOLOGY AND IMMUNOLOGY

NO.	COURSE OUTCOME
C107.1	To implement knowledge on the sterilization techniques and handling of microscope for different microbiological applications.
C107.2	To display experimental knowledge on staining methods and different types of media preparation for identification of bacteria.
C107.3	To execute the pure culture techniques and anaerobic culturing methods.
C107.4	To evaluate the serological techniques.
C107.5	To analyze the components of human sera by performing centrifugation, precipitation and chromatography techniques.

YEAR/ SEM: I/II – MDT21 - PRACTICAL II – SYSTEMETIC BACTERIOLOGY, MYCOLOGY, PARASITOLOGY & VIROLOGY

NO.	COURSE OUTCOME
C108.1	To apply skills to identify medically important bacteria from the clinical samples
C108.2	To analyze the processing of clinical sample.
C108.3	To evaluate medically important fungi using microscope.
C108.4	To the feces and blood sample for the detection of pathogenic parasites.
C108.5	To isolate phage from natural sources.

YEAR/ SEM: I/II – MDT2A - VIROLOGY

NO.	COURSE OUTCOME
C109.1	To understand the classes of viruses and general features & diseases caused by viruses.

C109.2	To outline the properties of bacteriophages and its application in bacterial genetics.
C109.3	To highlight the general characteristics of plant viruses and common viral diseases of crop plants.
C109.4	To extend knowledge on the DNA and RNA viruses.
C109.5	To identify the treatment of viral diseases and antiviral agents.

YEAR/ SEM: I/II – MDT2B – SYSTEMATIC MEDICAL BACTERIOLOGY

NO.	COURSE OUTCOME
C110.1	To extend knowledge on the clinical conditions of various bacterial syndromes.
C110.2	To outline the collection and transport of clinical specimens for microbiological diagnosis.
C110.3	To understand the morphology, cultural characteristics and laboratory diagnostics of Gram positive & Gram-negative bacteria.
C110.4	To identify the anaerobic Gram-negative bacteria and leptospirosis.
C110.5	To highlight the zoonotic diseases and their control.

YEAR/ SEM: I/II – MDT2C – MYCOLOGY AND PARASITOLOGY

NO.	COURSE OUTCOME
C111.1	To understand the morphology and Classification of fungi.
C111.2	To analyze the superficial and systemic fungal infection.
C111.3	To evaluate the collection and isolation of medically important fungi.
C111.4	To outline the medically important protozoa.
C111.5	To highlight the medically important helminths.

YEAR/ SEM: I/II – MDTAC – INDUSTRIAL AND PHARMACEUTICAL MICROBIOLOGY

NO.	COURSE OUTCOME
C112.1	To understand the types of fermentation and the raw materials used for the production of desired product.

C112.2	To outline the design & types of bioreactors and production of recombinant proteins.
C112.3	To highlight the biology and applications of various industrial microorganism.
C112.4	To extend knowledge on the production of primary metabolites.
C112.5	To extend knowledge on the production of secondary metabolites.

YEAR/ SEM: I/II – MDTBA – BIOSTATISTICS AND BIOINFORMATICS

NO.	COURSE OUTCOME
C113.1	To describe various applications of Biostatistics and to recognize the importance of data collection
C113.2	To recall the requisites of probability distribution and to interpret the measures of averages and dispersion. To evaluate practical problems arising in biostatistics
C113.3	To describes the contents and properties of the most important bioinformatics databases, perform text- and sequence-based searches.
C113.4	To understand the major steps in pairwise and multiple sequence alignment by dynamic programming and predict the secondary and tertiary structures of protein and DNA sequences.
C113.5	To familiarize with various tools in identifying sequences for enhancing the advancements in system medicines.

YEAR/ SEM: I/II – PSSEB – SPOKEN AND PRESENTATION SKILLS ADVANCED LEVEL

NO.	COURSE OUTCOME
C114.1	To inbuilt the basic attributes about presentation.
C114.2	To help the students to get acquaint with presenting a paper.
C114.3	To excel in advance presentation skill
C114.4	To help the student understand the difference between verbal and non-verbal communication.
C114.5	To make the student enhance the various aspects and techniques in presenting a topic related to their major stream.

YEAR/ SEM: II/III – MDT3A – MICROBIAL GENETICS

NO.	COURSE OUTCOME
C201.1	To outline the basics of nucleic acid and its properties.
C201.2	To highlight the organization of gene and chromosomes in prokaryotes.
C201.3	To understand the extrachromosomal genetic materials and their transfer mechanism.
C201.4	To analyze processes involved in gene mutation and transfer in microorganisms.
C201.5	To extend the knowledge of gene mapping and strain construction.

YEAR/ SEM: II/III – MDT3B – GENETIC ENGINEERING

NO.	COURSE OUTCOME
C202.1	To understand the principles, methods and enzymes in genetic engineering.
C202.2	To outline the vectors and artificial chromosomes.
C202.3	To categorize the cloning techniques and gene transfer mechanisms.
C202.4	To analyze the basic molecular biology techniques in gene manipulation.
C202.5	To articulate the different DNA finger printing and protein engineering techniques.

YEAR/ SEM: II/III – MDT3C – MOLECULAR BIOLOGY

NO.	COURSE OUTCOME
C203.1	To highlight the composition and functions of biomolecules.
C203.2	To understand the DNA replication, recombination and their repair mechanism.
C203.3	To articulate the processes involved in RNA synthesis.
C203.4	To extend the knowledge on the concepts of protein synthesis and post-translational modification of proteins.
C203.5	To analyze the different mechanisms of gene regulations in transcription and translation level

YEAR/ SEM: II/III – MDTAD – SOIL AND AGRICULTURAL MICROBIOLOGY

NO.	COURSE OUTCOME
C204.1	To summarize the properties of soil and interaction of microbes with plants, insects and microbes.
C204.2	To extend knowledge on biogeochemical cycles, biofertilizers and biopesticides.
C204.3	To articulate the principles of plant infection and defense mechanism.
C204.4	To categorize the symptoms, etiology and epidemiology of various plant diseases.
C204.5	To outline the use of biotechnological approaches to plant disease management.

YEAR/ SEM: II/III – MDTBB – ENVIRONMENTAL BIOTECHNOLOGY

NO.	COURSE OUTCOME
C205.1	To extend knowledge on biofilm occurrence, effect and control measures.
C205.2	To categorize the various types of bioreactors and its usage in production of commercially important products.
C205.3	To outline the waste water treatment, drinking water treatment and denitrification processes.
C205.4	To summarize the various detoxification of hazardous chemical and biodegradation of environmental contaminants.
C205.5	To understand the bioremediation of various industrial effluents and biomass from waste.

YEAR/ SEM: II/III – PSSEC – LIFE AND MANAGERIAL SKILLS

NO.	COURSE OUTCOME
C206.1	To increase one's knowledge and awareness of emotional competency and emotional intelligence at place of study/work.
C206.2	To provide opportunity for realizing one's potential through practical experience
C206.3	To develop interpersonal skills and adopt good leadership behaviour for empowerment of self and others.
C206.4	To set appropriate goals, manage stress and time effectively
C206.5	To manage competency- mix at all levels for achieving excellence with ethics.

YEAR/ SEM: II/III – PSSEQ - INTERNSHIP

NO.	COURSE OUTCOME
C207.1	To construct the company profile by compiling the brief history, management structure, products / services offered, key achievements and market performance for his / her organization of internship
C207.2	To assess its Strengths, Weaknesses, Opportunities and Threats (SWOT).
C207.3	To determine the challenges and future potential for his / her internship organization in particular and the sector in general.
C207.4	To test the theoretical learning in practical situations by accomplishing the tasks assigned during the internship period.
C207.5	To analyse the functioning of internship organization and recommend changes for improvement in processes

YEAR/ SEM: II/III – MDT31 – MICROBIAL GENETICS, MOLECULAR BIOLOGY AND GENETIC ENGINEERING

NO.	COURSE OUTCOME
C208.1	To experiment the techniques for isolation of plasmid and genomic DNA and their estimation methods.
C208.2	To execute the techniques for isolation of RNA from yeast and isolation of auxotrophic mutants.
C208.3	To illustrate the protein estimation, electrophoresis, isoelectric focusing and chromatography techniques.
C208.4	To display experimental knowledge on separation of proteins using chromatography, immobilization, western blotting techniques.
C208.5	To implement knowledge on the lab skills for competent cell preparation, transformation and restriction analysis.

YEAR/ SEM: II/IV – MDT41 – SOIL, AGRICULTURAL, FOOD AND ENVIRONMENTAL MICROBIOLOGY

NO.	COURSE OUTCOME
C209.1	To isolate and enumerate the soil microorganisms.
C209.2	To estimate the foliar infection by stoyer's method and cultivation of oyster mushroom.
C209.3	To evaluate the qualitative and quantitative analysis of milk sample.
C209.4	To enact the quantification of microorganisms in air.
C209.5	To experiment the techniques for the methods of physical, chemical and microbial assessment of water and potability test for water.

YEAR/ SEM: II/IV – MDT4A – FOOD, DAIRY AND ENVIRONMENT MICROBIOLOGY

NO.	COURSE OUTCOME
C210.1	To understand the principles & methods of food preservation and food borne diseases.
C210.2	To outline the spoilage and preservation of milk & milk products and milk borne diseases.
C210.3	To evaluate the assessment of air quality and air borne diseases.
C210.4	To extend the knowledge of students on waste water treatment methods.
C210.5	To summarize the role of microflora in degradation of xenobiotic compounds.

YEAR/ SEM: II/IV – MDT4Q - PROJECT

NO.	COURSE OUTCOME
C211.1	To Gain knowledge of conducting an independent research work
C211.2	To understand how to do selection of a topic, design of protocol and collection of literature
C211.3	To acquire knowledge on organizing and conducting the experimental part of the project.
C211.4	To learn how to write a project thesis, its organization and ethical parts.
C211.5	To learn how to publish the research paper in journals and to present the papers in national or international conferences.

YEAR/ SEM: II/IV – MDTAE – RESEARCH METHODOLGY

NO.	COURSE OUTCOME
C212.1	To understand the basics of research methodology and fundamentals of bioethics.
C212.2	To extend knowledge on writing the research report.
C212.3	To highlight the molecular biology techniques.
C212.4	To outline the histochemical and immuno techniques.
C212.5	To summarize the different radiolabeling techniques.

YEAR/ SEM: II/IV – PSSED – COMPUTING SKILL

NO.	COURSE OUTCOME
C213.1	To get basic knowledge in computer skills refer to the ability to use computers and related technology
C213.2	To make presentations, work with application software.
C213.3	To create visually beautiful slides, posters, marketing materials and presentations is one of the most desired skills.
C213.4	To gain knowledge on how to prepare charts, graphs and rank using functions.
C213.5	To learn basic understanding of computer hardware and software.