



M.E.S MAMPAD COLLEGE (AUTONOMOUS)

MAMPAD COLLEGE P.O, MALAPPURAM, KERALA, INDIA, 676542

Affiliated to University of Calicut

Accredited by NAAC with A grade

Syllabus Year	2021-2022
Department	BIOLOGY
Programme	INTEGRATED MSc. BIOLOGY

Programme outcome.

Sl.No	Programme Outcome
PO1	Train the students in scientific skill both in theory and practice
PO2	Develop their aptitude of individual planning , habit of working in groups , literature reviews etc which fit them in various spheres of life
PO3	Helps students secure skillfully their jobs as teachers both in schools and higher educational institutions, personnels in industries , naturalists and many other professions in private and public institutions

Programme specific out come

Sl.No	Programme Specific Outcome.
PSO1	A deeper understanding of interdisciplinary fields such as neurobiology , vacciology , stem cell biology, regenerative medicine is acquired.
PSO2	Introduce the students to various biophysical methods like protein crystallography, CD, ITC, SPR, DLS, MALS etc. used to characterize biomolecules and their interaction with ligands.
PSO3	Gains knowledge about research methodologies, effective communication skills and problem solving methods .
PSO4	Performs procedures as per laboratory standards in the areas of cell biology, molecular biology,

	genetics, microbiology, biochemistry etc
PSO5	Equip students to devise experiments and projects across the biological field in an interdisciplinary manner .
	Apart from enabling them to acquire jobs based on scientific skills, the programme specifically equips them to undertake research studies.
PSO6	Evaluate recent advances in biological knowledge and recognizes the limits of the scientific process
PSO7	Demonstrate professional work habits and ethical conduct when working individually or as a part of a team

Course Outcome (add sufficient Number of rows in each semester)

Semester	Course Code	Course Name	Course out come
I	BIO7B18	NEUROBIOLOGY	This course is designed to introduce students to major fields of neurobiology. This course will provide an understanding on the electrical activity of the neuron and how they communicate in the nervous system. They will be introduced to sensory physiology and its function. Students will gain an understanding on ongoing research approaches in neurobiology and techniques in order to develop critical thinking skills and formulate novel research questions.
	BIO7B19	MICROBIOME AND VACCINOLOGY	It is fascinating that human body harbors more microbial cells than the actual human cells. Microbiome of human is vast and diverse, and is strongly linked to human health and several diseases. The course aims to combine the microbiome of human, with emphasis on Indian population. Additionally, the course will provide on a very important overview on vaccinology, the theory and clinical applications of vaccines.
	BIO7B(E)05	STEM CELLS AND REGENERATIVE MEDICINE	The objective of the course is to expose the students to the principles of stem cells and tissue regeneration and introduce them to the potential of the field to revolutionize modern medicine. Starting with the founding principles and history of stem cells, the course will take the steps to introduce the students to their functional regulation and links with regeneration. The course will explore application part of various stem cell types.

	BIO7B(E)06	CHRONOBIOLOGY	The objective of this course is to provide students a fully textured academic experience in circadian rhythm research. The course will give an overview in terms of the circadian clock and its role in rhythmic behavior, physiology, metabolism and cognitive function. Research articles are discussed throughout the semester to facilitate the learning process by identifying the hypothesis, understand the experiment and statistical methods to critically assess the conclusion and to develop future research question(s).
II	BIO8B20	STRUCTURAL BIOLOGY	To introduce Biology major students the importance of Structural Biology in everyday research and to impart in them the knowledge to understand the principles of protein structures and protein structure determination using protein crystallography, single particle cryoEM etc., and their applications in structure-based drug design. The course also aims to introduce the students to other biophysical methods like CD, ITC, SPR, DLS, MALS etc. used to characterize biomolecules and their interaction with ligands.
	BIO8B21	ADVANCES IN PLANT BIOLOGY	Students will learn the cutting edge of dynamics of molecular and cellular mechanisms underlying morphodynamics in plants. The course offers the possibility to learn integrating how internal cues respond to changes in external inductive cues in plants, which continuously get exposed to fluctuating environmental conditions throughout their growth phase.
	BIO8B22	ANIMAL BEHAVIOR	The objective of the course is to gain an appreciation for the evolution of diverse behaviours in animals. The course is designed to expose students to understand the evolutionary framework that guide the evolution of various behaviours. The course is designed to be broad and encompass behaviours that are critical to survival of individuals and groups
III	BIO9B23	RESEARCH METHODOLOGY	At the end of this course, the students should be able to understand some basic concepts of research and its methodologies - organize and conduct research (advanced project) in a more appropriate manner, identify appropriate research topics and, select and define appropriate research problem
	BIO9B24	BIOSAFETY AND REGULATIONS	To introduce concepts related to safety in Biological laboratories and Biological waste management.
IV	BIO10B25	SCIENTIFIC WRITING	The course will be designed to help students effectively communicate their research under such scenarios.