

PROGRAM OUTCOME (POs)	
Course Code	M.Sc. MEDICAL MOLECULAR BIOLOGY
PO1	Nurture the scientific and/or clinical knowledge and skills for development of industrial application, health care practices and entrepreneurship
PO2	Develop the ability of critical thinking to analyse, interpret problems and to find out systematic approach for solution
PO3	Impart decision making capability of handling various circumstances in their respective areas
PO4	Demonstrate research skills for planning, designing, implementation and effective utilization of research findings for community
PO5	Develop an ability to function as an efficient individual and team player in multidisciplinary sectors for effective outcomes
PO6	Demonstrate an effective written and oral communication skills to communicate effectively in health care sector, industries, academia and research.
PO 7	Inculcate code of ethics in professional and social circumstances to execute them in daily practices and research irrespective areas of specialization
PO8	Develop lifelong learning attitude and values for enhancement professional and social skills for an overall development
Course Outcomes (COs)	
Course Code	M.Sc. MEDICAL MOLECULAR BIOLOGY
SEMESTER I	
MMB 101 T	Cell Biology
CO1	Students will gain an understanding of cell origin.
CO2	Basic understanding of cell structure and its components.
CO3	Students will understand the cell function.
CO4	Understanding of cell regulations and physiology.
MMB 102 T	Molecular Immunology
CO1	Students will gain understanding of the immune system and immunity.
CO2	It highlights understanding of the molecular structure of immune cells.
CO3	Understanding of role and expression of immune system during infection and immunity
CO4	Understanding of the status of the immune system during disease system
CO5	Exploration of immune system concepts into design and development of new therapeutics.
MMB 103 T	Molecular Enzymology
CO1	Post graduate students will understand the basics of enzymes and their function in biological systems.
CO2	They will understand the enzyme modulation during specific situations.
CO3	Basic understanding of the applications of the enzyme in various industries
CO4	Students will learn the basics techniques of enzymology.
CC 001 T	Research Methodology & Biostatistics (Core Course)
CO1	Student will be able to understand develop statistical models, research designs with the understating of background theory of various commonly used statistical techniques as well as analysis, interpretation & reporting of results and use of statistical software.
MMB 107 CP	MBT Directed Clinical Education-I
CO1	Demonstrate proficiency in diagnostic and therapeutic techniques used in hospital laboratories.
CO2	Effectively communicate and collaborate with healthcare professionals and patients.
CO3	Develop decision-making skills for effective healthcare management and administration.
SEMESTER II	
MMB 108 T	Gene and Protein Science
CO1	Students will be able to understand the basis of inheritance, gene organization and structure of DNA.

CO2	They will be also understanding gene function and linkages with protein. Understanding of genome and proteome will be important learning outcome.
CO3	Understanding of basics of protein structure, purification and characterization will be major outcome of the section.
MMB 109 T	Bioinformatics and Computational Biology
CO1	The major outcome in this section will be basic knowledge of various data banks and datasets mainly for protein sequence and nucleic acid sequence.
CO2	Students will understand the basic skill data analysis including cluster analysis and sequence analysis.
MMB 110 T	DNA Recombinant technology
CO1	Student will be able to understand concept and process of DNA recombinant technology. It will also provide strategy and designs of experiment for product development. Course will also generate and teach as skills in molecular biology.
MMB 111 T	Metabolic Engineering
CO1	Students will understand the basics of metabolic pathways and network in cellular system.
CO2	Understanding different models of cellular reactions.
CO3	Students will understand the concept of metabolic flux analysis and metabolic control analysis.
CO4	Understanding of the concept of metabolic design in strain development
CO5	It will provide the understanding of the potential of metabolic engineering in industrial applications.
MMB 116 CP	MBT Directed Clinical Education-I
CO1	Demonstrate proficiency in diagnostic and therapeutic techniques used in hospital laboratories.
CO2	Effectively communicate and collaborate with healthcare professionals and patients.
CO3	Develop decision-making skills for effective healthcare management and administration.
Skill Enhancement Courses	
SEC 001 T	Innovation and Entrepreneurship
CO1	Students will grasp the concepts of innovation, its ecosystem, and the role of various stakeholders such as government policies, startups, and innovation hubs.
CO2	Cultivating an entrepreneurial mindset and leadership qualities necessary
CO3	Understanding the intersection of technology and innovation and leveraging emerging technologies for entrepreneurial ventures
SEC 002 T	Comprehensive Molecular Diagnostics and Advanced Gene Expression Analysis (NPTEL)
CO1	Explain the principles of molecular diagnostics and its role in modern healthcare.
CO2	Describe the significance of biomarkers in disease detection and prognosis.
CO3	Demonstrate proper methods for sample collection, storage, and processing in a diagnostic lab.
CO4	Perform molecular diagnostic techniques such as PCR, ELISA, and immunohistochemistry.
CO5	Analyze the applications of molecular diagnostics in infectious diseases and cancer.
CO6	Evaluate the role of emerging diagnostic technologies like NGS and CRISPR-based methods.
CO7	Apply biosafety and biomedical waste disposal protocols in a molecular diagnostics lab.

MGM SCHOOL OF BIOMEDICAL SCIENCES, NAVI MUMBAI
(A constituent unit of MGM INSTITUTE OF HEALTH SCIENCES)
 (Deemed University u/s 3 of UGC Act 1956)
 Grade "A" Accredited by NAAC
 Sector 1, Kamothe Navi Mumbai-410209, Tel.No.:022-27437631,27432890
 Email. sbsnm@mgmuhs.com / Website : www.mgmsbsnm.edu.in

CO PO Matrix
Programme - M.Sc. Molecular Biology
Sem I to IV

- PO1. Nurture the scientific and/or clinical knowledge and skills for development of industrial application, health care practices and entrepreneurship
 PO2. Develop the ability of critical thinking to analyse, interpret problems and to find out systematic approach for solution
 PO3. Impart decision making capability of handling various circumstances in their respective areas
 PO4. Demonstrate research skills for planning, designing, implementation and effective utilization of research findings for community
 PO5. Develop an ability to function as an efficient individual and team player in multidisciplinary sectors for effective outcomes
 PO6. Demonstrate an effective written and oral communication skills to communicate effectively in health care sector, industries, academia and research.
 PO7. Inculcate code of ethics in professional and social circumstances to execute them in daily practices and research irrespective areas of specialization
 PO8. Develop lifelong learning attitude and values for enhancement professional and social skills for an overall development

PO Mapping same with correlation level 3,2,1 The notation of 1 - low, 2 - moderate , 3 - high

				Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average	
Semester	Course / Course Code	Course Outcome	Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8		
Semester 1	Cell Biology (MMB 101 T)	CO1	Students will gain an understanding of cell origin.	3	3	1	2	2	2	3	2	2.3	
		CO2	Basic understanding of cell structure and its components.	3	3	3	2	1	2	3	2	2.4	
		CO3	Students will understand the cell function.	2	3	1	2	3	2	2	2	2.1	
		CO4	Understanding of cell regulations and physiology.	2	2	1	3	2	2	2	3	2.1	
		Average		2.5	2.8	1.5	2.3	2.0	2.0	2.5	2.3	2.2	
	Molecular Immunology (MMB 102 T)	CO1	Students will gain understanding of the immune system and immunity.	3	2	2	3	2	1	2	2	2	2.1
		CO2	It highlights understanding of the molecular structure of immune cells.	3	3	1	3	2	2	2	2	2	2.3
		CO3	Understanding of role and expression of immune system during infection and immunity	3	3	1	3	1	2	2	2	2	2.1
		CO4	Understanding of the status of the immune system during disease system	3	2	3	2	2	3	2	2	2	2.4
		CO5	Exploration of immune system concepts into design and development of new therapeutics.	3	3	1	3	1	1	2	2	2	2.0
		Average		3	2.6	1.6	2.8	1.6	1.8	2	2	2	2.2
	Molecular Enzymology (MMB 103 T)	CO1	Post graduate students will understand the basics of enzymes and their function in biological systems.	2	3	1	2	2	1	1	3	1.9	
		CO2	They will understand the enzyme modulation during specific situations.	2	3	1	2	1	2	1	2	1.8	
		CO3	Basic understanding of the applications of the enzyme in various industries	3	1	2	2	1	2	2	3	2.0	
		CO4	Students will learn the basics techniques of enzymology.	3	2	1	3	1	1	2	3	2.0	

	Average		2.5	2.25	1.25	2.25	1.25	1.5	1.5	2.75	1.9		
	Research Methodology & Biostatistics (Core Course) (CC 001 T)	CO1	Student will be able to understand develop statistical models, research designs with the understating of background theory of various commonly used statistical techniques as well as analysis, interpretation & reporting of results and use of statistical software.	3	3	2	3	1	1	2	2	2.1	
	MMB Directed Clinical Education-I (MMB 107 CP)	CO1	Demonstrate proficiency in diagnostic and therapeutic techniques used in hospital laboratories.	3	2	1	2	2	3	1	3	2.1	
		CO2	Effectively communicate and collaborate with healthcare professionals and patients.	2	2	1	2	2	3	1	3	2.0	
		CO3	Develop decision-making skills for effective healthcare management and administration.	2	3	3	2	2	2	1	3	2.3	
		Average		3	3	2	2	2	2	1	3	2.1	
Semester 2	Gene and Protien Science (MMB 108 T)	CO1	Students will be able to understand the basis of inheritance, gene organization and structure of DNA.	3	1	1	2	2	1	1	3	1.8	
		CO2	They will be also understanding gene function and linkages with protein. Understanding of genome and proteome will be important learning outcome.	2	3	2	2	1	2	1	2	1.9	
		CO3	Understanding of basics of protein structure, purification and characterization will be major outcome of the section.	3	3	1	3	1	1	2	2	2.0	
		Average		3	2	1	2	1	2	1	2	2	
	Bioinformatics and Computational Biology (MMB 109 T)	CO1	The major outcome in this section will be basic knowledge of various data banks and datasets mainly for protein sequence and nucleic acid sequence.	2	1	1	2	2	1	2	2	2	1.6
		CO2	Students will understand the basic skill data analysis including cluster analysis and sequence analysis.	3	2	1	2	1	2	2	3	2.0	
		Average		3	2	1	2	2	2	2	3	2	
	DNA Recombinant technology (MMB 110 T)	CO1	Student will be able to understand concept and process of DNA recombinant technology. It will also provide strategy and designs of experiment for product development. Course will also generate and teach as skills in molecular biology.	3	3	1	3	1	2	1	2	2.0	
		Average		3	3	1	3	1	2	1	2	2.0	
	Metabolic Engineering (MMB 111 T)	CO1	Students will understand the basics of metabolic pathways and network in cellular system.	2	2	3	2	2	1	2	2	2.0	
		CO2	Understanding different models of cellular reactions.	3	2	1	2	2	1	1	2	1.8	

	CO3	Students will understand the concept of metabolic flux analysis and metabolic control analysis.	2	3	2	2	2	2	2	3	2.3
	CO4	Understanding of the concept of metabolic design in strain development It will provide the understanding of the potential of metabolic engineering in industrial applications.	3	3	1	2	2	1	2	3	2.1
	Average		3	3	2	2	2	1	2	3	2.0
MMB Directed Clinical Education-II (MMB 116 CP)	CO1	Demonstrate proficiency in diagnostic and therapeutic techniques used in hospital laboratories.	3	2	1	2	2	3	1	3	2.1
	CO2	Effectively communicate and collaborate with healthcare professionals and patients.	2	2	1	2	2	3	1	3	2.0
	CO3	Develop decision-making skills for effective healthcare management and administration.	2	3	3	2	2	2	1	3	2.3
	Average		3	2	2	3	2	2	1	3	2.3
Innovation and Entrepreneurship (SEC 001 T)	CO1	Students will grasp the concepts of innovation, its ecosystem, and the role of various stakeholders such as government policies, startups, and innovation hubs.	3	3	3	2	1	1	1	2	2.0
	CO2	Cultivating an entrepreneurial mindset and leadership qualities necessary	3	1	1	3	1	2	1	2	1.8
	CO3	understanding the intersection of technology and innovation and leveraging emerging technologies for entrepreneurial ventures	2	1	1	3	3	1	1	2	1.8
	Average		3	2	2	3	2	1	1	2	1.8
Comprehensive Molecular Diagnostics and Advanced Gene Expression Analysis (NPTEL) (SEC 002 T)	CO1	Explain the principles of molecular diagnostics and its role in modern healthcare.	3	2	1	3	3	3	1	3	2.4
	CO2	Describe the significance of biomarkers in disease detection and prognosis.	3	2	2	2	2	2	1	3	2.1
	CO3	Demonstrate proper methods for sample collection, storage, and processing in a diagnostic lab.	3	3	2	3	2	2	1	3	2.4
	CO4	Perform molecular diagnostic techniques such as PCR, ELISA, and immunohistochemistry.	3	2	2	3	3	2	1	3	2.4
	CO5	Analyze the applications of molecular diagnostics in infectious diseases and cancer.	3	2	2	3	2	2	1	3	2.3
	CO6	Evaluate the role of emerging diagnostic technologies like NGS and CRISPR-based methods.	3	3	2	3	1	2	1	2	2.1
	CO7	Apply biosafety and biomedical waste disposal protocols in a molecular diagnostics lab.	3	2	1	3	2	2	1	3	2.1
	Average		3.0	2.3	1.7	2.9	2.1	2.1	1.0	2.9	2.3

PROGRAM OUTCOME (POs)	
Course Code	M.Sc. MEDICAL MOLECULAR BIOLOGY
PO1	Nurture the scientific and/or clinical knowledge and skills for development of industrial application, health care practices and entrepreneurship
PO2	Develop the ability of critical thinking to analyse, interpret problems and to find out systematic approach for solution
PO3	Impart decision making capability of handling various circumstances in their respective areas
PO4	Demonstrate research skills for planning, designing, implementation and effective utilization of research findings for community
PO5	Develop an ability to function as an efficient individual and team player in multidisciplinary sectors for effective outcomes
PO6	Demonstrate an effective written and oral communication skills to communicate effectively in health care sector, industries, academia and research.
PO 7	Inculcate code of ethics in professional and social circumstances to execute them in daily practices and research irrespective areas of specialization
PO8	Develop lifelong learning attitude and values for enhancement professional and social skills for an overall development
Course Outcomes (COs)	
Course Code	M.Sc. MEDICAL MOLECULAR BIOLOGY
SEMESTER III	
MMB 117 T	Genomics
CO1	The student will understand large scale study of gene structure and function.
CO2	The course will highlight the various technologies involved in mapping of genome.
CO3	Students will understand the overview of genome regulation.
CO4	Will explore applications of genomics in biomarker discovery, drug development, disease diagnostics, and personalized medicine.
MMB 118 T	Proteomics
CO1	Students will gain knowledge of protein structure and function at large scale.
CO2	Students will understand the post-translational modifications of protein, and their roles in biological systems.
CO3	Students will understand identify protein characteristics and functions including protein - protein interaction
CO4	Help to explore applications in biomarker discovery, drug development, disease diagnostics, and personalized medicine.
MMB 119 T	Drug Discovery
CO1	Students will gain knowledge of high-throughput screening, computational drug design, and vitro assays.
CO2	Students will understand drug testing phases, regulatory requirements, and ethical considerations.
CO3	Will develop insights into pharmaceutical innovations and real-world drug development.
MMB 120	Research Project/ Disserration
CO1	Formulate a research problem by reviewing scientific literature and identifying knowledge gaps in molecular biology.
CO2	Design and execute experiments using appropriate methodologies, tools, and techniques relevant to biomedical research.
CO3	Demonstrate proficiency in handling advanced molecular biology, biochemistry, microbiology, and bioinformatics methods as required for their research project.

CO4	Critically analyse and interpret experimental data using appropriate statistical and computational tools.
CO5	Adhere to ethical standards in biomedical research, including biosafety, data integrity, and responsible reporting.
CO6	Communicate research findings effectively through well-structured dissertation writing, presentations, and potential publications.
CO7	Work independently and collaboratively to solve research challenges and manage time efficiently during the project.
CO8	Develop a research-oriented mind-set that prepares them for higher studies, industrial R&D, or academic research careers.
MMB 124 CP	MMB Directed Clinical Education III
CO1	Demonstrate proficiency in diagnostic and therapeutic techniques used in hospital
CO2	Effectively communicate and collaborate with healthcare professionals and patients.
CO3	Develop decision-making skills for effective healthcare management and administration.
SEMESTER IV	
MMB 125 T	Bioethics, IPR and Biosafety
CO1	Evaluate ethical concerns in biomedical and biotechnological practices.
CO2	Understand different types of IPR and their applications.
CO3	Apply various national and international guidelines in biomedical and health research.
MMB 120	Research Project / Dissertation
CO1	Formulate a research problem by reviewing scientific literature and identifying knowledge gaps in molecular biology.
CO2	Design and execute experiments using appropriate methodologies, tools, and techniques relevant to biomedical research.
CO3	Demonstrate proficiency in handling advanced molecular biology, biochemistry, microbiology, and bioinformatics methods as required for their research project.
CO4	Critically analyse and interpret experimental data using appropriate statistical and computational tools.
CO5	Adhere to ethical standards in biomedical research, including biosafety, data integrity, and responsible reporting.
CO6	Communicate research findings effectively through well-structured dissertation writing, presentations, and potential publications.
CO7	Work independently and collaboratively to solve research challenges and manage time efficiently during the project.
CO8	Develop a research-oriented mind-set that prepares them for higher studies, industrial R&D, or academic research careers.
MMB 126 P	Internship/ Training (Clinical/ Industrial)
CO1	Demonstrate an understanding of industrial processes, laboratory practices, and molecular biological applications in real-life settings.
CO2	Apply theoretical knowledge gained during coursework to practical situations in industry/clinical/research environments.
CO3	Operate and gain familiarity with standard instruments, diagnostic tools, and workflows followed in molecular biology-related organizations.
CO4	Analyse and document technical data, reports, and observations from industrial exposure.
CO5	Exhibit improved professional skills including communication, teamwork, adaptability, and workplace ethics.

CO6	Critically evaluate the role of medical molecular biology in healthcare, diagnostics, pharmaceuticals, and research.
CO7	Identify potential career pathways and entrepreneurial opportunities in the molecular biology sector
CO8	Integrate biosafety, regulatory, and quality assurance practices into professional conduct.



MGM SCHOOL OF BIOMEDICAL SCIENCES, NAVI MUMBAI
(A constituent unit of MGM INSTITUTE OF HEALTH SCIENCES)

(Deemed University u/s 3 of UGC Act 1956)

Grade "A" Accredited by NAAC

Sector 1, Kamothe Navi Mumbai-410209, Tel.No.:022-27437631,27432890

Email. sbsnm@mgmuhs.com / Website : www.mgmsbsnm.edu.in

CO PO Matrix
Programme - M.Sc. Molecular Biology
Sem III to IV

- PO1 Nurture the scientific and/or clinical knowledge and skills for development of industrial application, health care practices and entrepreneurship
- PO2 Develop the ability of critical thinking to analyse, interpret problems and to find out systematic approach for solution
- PO3 Impart decision making capability of handling various circumstances in their respective areas
- PO4 Demonstrate research skills for planning, designing, implementation and effective utilization of research findings for community
- PO5 Develop an ability to function as an efficient individual and team player in multidisciplinary sectors for effective outcomes
- PO6 Demonstrate an effective written and oral communication skills to communicate effectively in health care sector, industries, academia and research.
- PO7 Inculcate code of ethics in professional and social circumstances to execute them in daily practices and research irrespective areas of specialization
- PO8 Develop lifelong learning attitude and values for enhancement professional and social skills for an overall development

PO Mapping same with correlation level 3,2,1 The notation of 1 - low, 2 - moderate , 3 - high

				Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average	
Semester	Course / Course Code	Course Outcome	Course Outcome	PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8		
	Genomics (MMB 117 T) & (MMB 121 P)	CO1	The student will understand large scale study of gene structure and function.	3	2	1	2	1	2	1	2	1.8	
		CO2	The course will highlight the various technologies involved in mapping of genome.	2	3	2	2	2	1	2	2	2.0	
		CO3	Students will understand the overview of genome regulation.	2	1	1	2	2	2	1	3	1.8	
		CO4	Will explore applications of genomics in biomarker discovery, drug development, disease diagnostics, and personalized medicine.	3	3	2	2	1	3	2	2	2.3	
		Average			2.5	2.3	1.5	2.0	1.5	2.0	1.5	2.3	1.9
	Proteomics (MMB 118 T) & (MMB 122 P)	CO1	Students will gain knowledge of protein structure and function at large scale.	2	3	1	2	1	1	1	1	2	1.6
		CO2	Students will understand the post-translational modifications of protein, and their roles in biological systems.	3	2	2	2	1	2	1	1	2	1.9
		CO3	Students will understand identify protein characteristics and functions including protein - protein interaction	3	1	1	2	2	1	2	2	3	1.9

Semester III

	CO4	Help to explore applications in biomarker discovery, drug development, disease diagnostics, and personalized medicine.	3	3	2	2	1	2	1	2	2.0
	Average		2.8	2.3	1.5	2.0	1.3	1.5	1.3	2.3	1.8
Drug Discovery (MMB 119 T) & (MMB 123 P)	CO1	Students will gain knowledge of high-throughput screening, computational drug design, and vitro assays.	3	1	1	2	1	1	2	2	1.6
	CO2	Students will understand drug testing phases, regulatory requirements, and ethical considerations.	3	1	1	2	2	1	1	2	1.6
	CO3	Will develop insights into pharmaceutical innovations and real-world drug development.	2	1	1	2	1	1	1	2	1.4
	Average		2.7	1.0	1.0	2.0	1.3	1.0	1.3	2.0	1.5
Research Project/ Dissertation (MMB 120)	CO1	Formulate a research problem by reviewing scientific literature and identifying knowledge gaps in molecular biology.	2.0	2.0	2.0	3.0	1.0	3.0	1.0	3.0	2.1
	CO2	Design and execute experiments using appropriate methodologies, tools, and techniques relevant to biomedical research.	2.0	2.0	2.0	3.0	2.0	3.0	1.0	2.0	2.1
	CO3	Demonstrate proficiency in handling advanced molecular biology, biochemistry, microbiology, and bioinformatics methods as required for their research project.	3.0	2.0	2.0	1.0	3.0	2.0	1.0	3.0	2.1
	CO4	Critically analyse and interpret experimental data using appropriate statistical and computational tools.	2.0	1.0	3.0	2.0	3.0	2.0	1.0	2.0	2.0
	CO5	Adhere to ethical standards in biomedical research, including biosafety, data integrity, and responsible reporting.	3.0	2.0	2.0	2.0	1.0	3.0	1.0	3.0	2.1
	CO6	Communicate research findings effectively through well-structured dissertation writing, presentations, and potential publications.	2.0	1.0	3.0	2.0	2.0	2.0	1.0	3.0	2.0
	CO7	Work independently and collaboratively to solve research challenges and manage time efficiently during the project.	3.0	2.0	1.0	2.0	3.0	1.0	1.0	3.0	2.0
	CO8	Develop a research-oriented mind-set that prepares them for higher studies, industrial R&D, or academic research careers.	2.0	3.0	2.0	1.0	2.0	2.0	1.0	2.0	1.9
	Average		2.6	1.7	1.7	2.0	1.7	1.8	1.2	2.4	1.9
	CO1	Demonstrate proficiency in diagnostic and therapeutic techniques used in hospital laboratories.	3	2	1	2	2	3	1	3	2.1

MMB Directed Clinical Education-III (MMB 124 CP)	CO2	Effectively communicate and collaborate with healthcare professionals and patients.	2	2	1	2	2	3	1	3	2.0
	CO3	Develop decision-making skills for effective healthcare management and administration.	2	3	3	2	2	2	1	3	2.3
	Average		2.4	2.2	1.7	2.0	1.9	2.4	1.0	2.8	2.1
Bioethics, IPR and Biosafety (MMB 125 T)	CO1	Effectively manage the health and safety aspects of a biological laboratory.	3	3	1	2	2	1	2	2	2.0
	CO2	Give reliable, professional and informed advice and information to colleagues and managers	2	2	3	2	1	2	1	2	1.9
	CO3	Help ensure that their institution complies with relevant legislation, liaise effectively with enforcing authorities and beware of the penalties for failing to comply.	2	2	3	2	2	1	2	2	2.0
	CO4	Build a context of understanding through communication.	2	2	1	2	2	3	1	2	1.9
	CO5	Mediate between other conflicting parties.	2	3	1	2	1	1	1	2	1.6
	CO6	Exhibit de – escalatory behaviors in situations of conflict.	2	3	1	3	2	1	2	2	2.0
	CO7	Demonstrate acknowledgment and validation of the feelings, opinions, and contributions of others.	2	2	3	2	2	1	2	2	2.0
	Average		2.1	2.4	1.9	2.1	1.7	1.4	1.6	2.0	1.9
Research Project / Dissertation (MMB 120)	CO1	Formulate a research problem by reviewing scientific literature and identifying knowledge gaps in molecular biology.	2.0	2.0	2.0	3.0	1.0	3.0	1.0	3.0	2.1
	CO2	Design and execute experiments using appropriate methodologies, tools, and techniques relevant to biomedical research.	2.0	2.0	2.0	3.0	2.0	3.0	1.0	2.0	2.1
	CO3	Demonstrate proficiency in handling advanced molecular biology, biochemistry, microbiology, and bioinformatics methods as required for their research project.	3.0	2.0	2.0	1.0	3.0	2.0	1.0	3.0	2.1
	CO4	Critically analyse and interpret experimental data using appropriate statistical and computational tools.	2.0	1.0	3.0	2.0	3.0	2.0	1.0	2.0	2.0
	CO5	Adhere to ethical standards in biomedical research, including biosafety, data integrity, and responsible reporting.	3.0	2.0	2.0	2.0	1.0	3.0	1.0	3.0	2.1
	CO6	Communicate research findings effectively through well-structured dissertation writing, presentations, and potential publications.	2.0	1.0	3.0	2.0	2.0	2.0	1.0	3.0	2.0

Semester IV

	CO7	Work independently and collaboratively to solve research challenges and manage time efficiently during the project.	3.0	2.0	1.0	2.0	3.0	1.0	1.0	3.0	2.0
	CO8	Develop a research-oriented mind-set that prepares them for higher studies, industrial R&D, or academic research careers.	2.0	3.0	2.0	1.0	2.0	2.0	1.0	2.0	1.9
	Average		2.3	2.2	2.0	2.1	1.9	1.8	1.3	2.3	2.0
Internship/ Training (Clinical/ Industrial) (MMB 126 P)	CO1	Demonstrate an understanding of industrial processes, laboratory practices, and molecular biological applications in real-life settings.	2	3	2	1	3	2	1	2	2.0
	CO2	Apply theoretical knowledge gained during coursework to practical situations in industry/clinical/research environments.	3	2	2	3	2	2	1	3	2.3
	CO3	Operate and gain familiarity with standard instruments, diagnostic tools, and workflows followed in molecular biology-related organizations.	2	2	1	2	3	2	1	2	1.9
	CO4	Analyse and document technical data, reports, and observations from industrial exposure.	3	2	2	3	1	2	1	2	2.0
	CO5	Exhibit improved professional skills including communication, teamwork, adaptability, and workplace ethics.	2	1	2	3	1	3	1	2	1.875
	CO6	Critically evaluate the role of medical molecular biology in healthcare, diagnostics, pharmaceuticals, and research.	2	2	3	1	2	2	1	2	1.875
	CO7	Identify potential career pathways and entrepreneurial opportunities in the molecular biology sector	3	1	2	2	1	2	2	3	2
	CO8	Integrate biosafety, regulatory, and quality assurance practices into professional conduct.	2	2	2	2	2	2	1	3	2
	Average		2.4	1.9	2.0	2.1	1.9	2.1	1.1	2.4	2.0



Director
MGM School of Biomedical Science
Kamohye, Navi Mumbai