



M.Sc., BIOMEDICAL SCIENCE

About School of Biological Sciences, the M.Sc., Biomedical Science Course, Infrastructure Available, Eligibility, Mode of Selection, Course Structure & Fee Structure (2019-2021)



**SCHOOL OF BIOLOGICAL SCIENCES
MADURAI KAMARAJ UNIVERSITY
MADURAI - 625 021, INDIA**

OVERVIEW OF “M.SC., BIOMEDICAL SCIENCE” PROGRAM:

M.Sc., Biomedical Science is a 2-year postgraduate course offered by School of Biological Sciences (SBS), Madurai Kamaraj University in collaboration with Dr.M.G.R. Medical University, Chennai. M.Sc., Biomedical Science course is designed to impart knowledge on molecular, genomic, biochemical, microbial and physiological aspects of the human diseases, disease diagnostics and molecular therapeutics.

EXPERTISE IN BIOMEDICAL RESEARCH TRAINING AT SBS:

School of Biological Sciences of Madurai Kamaraj University has Departments of Genetics, Immunology, Biochemistry, Molecular Biology, Microbial Technology, Animal Physiology and Plant Sciences and with the research focus on the diseases such as cancer, cardiovascular, diabetes, kidney and other genetic, metabolic and infectious diseases. Susceptibility of Human Genome to specific diseases, Identification disease determinants, Identification of Disease Biomarkers, Identification Therapeutic Targets and Identification of Therapeutic Agents for different Diseases are the research focus of the faculty members at School of Biological Sciences, Madurai Kamaraj University. The School has made a huge array of outstanding research publications in the above said areas in leading international journals. School also has tremendous infrastructure and equipment facility worth of Rs. 50 crore for world class research in the above listed areas of Biomedical Science.

ABOUT THE COURSE:

In the M.Sc., Biomedical Science, program, the students would be exposed and trained for advanced principles and facts in the subjects 1) Molecular Biology, 2) Genetics, 3) Biochemistry, 4) Medical Microbiology, 5) Biostatistics, 6) Biosafety & Bioethics, 7) Immunology , 8) Human Physiology & Anatomy, 9) Molecular Pharmacology, 10) Cell and Developmental Biology, 11) Molecular Diagnostics and Therapeutics, 12) Medical Anthropology, 13) Genomics, Proteomics & Metabolomics, 14) Stem Cell Biology, Therapeutics& Nanotherapeutics, 15) Neurobiology, 16) Human Genetic and Metabolic Disorders & Diagnostics, 17) Clinical Trials & Translational Medicine, 18) Biomedical Patents & Technologies, and 19) Drug Discovery Methods. More than theoretical training, hands on training in the techniques and technology would be emphasized and practiced in the program. The curriculum also comprises a whole semester research project on addressing a specific problem in Biomedical Science. Also it is possible that the whole semester project would yield a co-authored research publication in an international biomedical journal or a patent of a technology / product / process / method.

Biomedical Science approaches provide solutions in biomedical research by creating possibilities for the development of modern diagnostics and also new therapeutic agents for genetic, metabolic and infectious diseases. Owing to the raising global need for the improved management of human health, there is a need for highly qualified and trained manpower in the field of Biomedical Science. This course is designed for the students to gain world class exposure in the field with hands on training in the techniques. The students would be oriented both for basic and applied research in different areas of Biomedical Sciences. The course is a great opportunity to the students with an ambition of becoming scientists of international standard.



M.Sc. Biomedical Science

Course structure (2019-2021) - CHOICE BASED CREDIT SYSTEM (CBCS)

SEMESTER I

CORE COURSES

Molecular Biology & Genetics

Biochemistry

Medical Microbiology

Lab in Molecular Biology & rDNA Technology

Lab in Diagnostic Microbiology & Biochemistry

ELECTIVE COURSES

Biostatistics

Biosafety & Bioethics

SEMESTER II

CORE COURSES

Immunology

Genomics, Proteomics & Metabolomics

Cell and Developmental Biology

Lab in Immunology & Molecular Diagnostics

Lab in Genomics, Proteomics & Metabolomics

ELECTIVE COURSES

Molecular Diagnostics, Therapeutics & Genomic Medicine

Medical Anthropology

SEMESTER III

CORE COURSES

Research Project in Biomedical Science

Stem Cell Biology, Nanomedicine and Therapeutics

ELECTIVE COURSES

Clinical Trials & Translational Medicine

Biomedical Patents & Technologies

SEMESTER IV

CORE COURSES

Human Physiology & Anatomy

Molecular Pharmacology & Neurobiology

Human Genetic and Metabolic Disorders & Diagnostics

Lab in Computational Biology & Biomedical Informatics

Critical Documentation in Biomedical Science

ELIGIBILITY FOR ADMISSION:

Students with high academic standards in Bachelor's degree are selected through a national level entrance test conducted by the Madurai Kamaraj University. Candidates who have successfully completed Bachelor degree in any branch of Life Sciences (Zoology, Microbiology, Biochemistry, Biotechnology, Genetics, Botany or equivalent), Physical and Chemical Sciences, Medicine, Pharmacy, Veterinary and Agriculture from any recognized Indian or Foreign University. Students with Degrees / Professional Degrees in Medicine, Alternate Medicine, Pharmacy, Biotechnology, Computer Science, Information Technology and Bioinformatics, with Biology at +2 level are also eligible.

MODE OF SELECTION:

The entrance exam will test the knowledge of applicants in the area of Molecular Biology, Biotechnology, Microbiology, Immunology, Animal Physiology, Genetics, Biochemistry, Bioinformatics, Zoology and Basic Chemistry. Every year, 20 students would be admitted following the reservation system of Govt. of TamilNadu.

COURSE FEE DETAILS:

	Tution Fee	Lab Fee	Special Fees	Other fees	Caution deposit	CBCS hand book	Total (Rs.)
I year	15,000	32,000	1800	100	1000	100	50,000
II year	15,000	32,000	1800	-	-	-	48,800

CAREER PERSPECTIVES:

- Ph.D. / Research Career in Biomedical Science, Biotechnology and related areas in Leading Institutions in India and Abroad.
- Scientist in Pharmas, Industries, Universities, Institutions and Diagnostic Labs.
- Professor in Universities (with Ph.D., & further experience, training & specialization)
- Clinical Research, Clinical Data Analysts and Clinical Trial Related Jobs (with Training / Experience/Specialization in Clinical Trials)
- Biomedical entrepreneurship / Biomedical start-ups.
- Bioinformatics / Biomedical-informatics / Genome Sequence Analysis Expert (with Training / Specialization in Bioinformatics / Computational Genomics / Genome Data Analysis)
- Patent Agent/Lawyer/Attorney (With legal Experience/Degree)
- Management (With Experience / MBA Degree)
- Biomedical/ Bioprocess Engineer (With exposure in Bio related Product Engineering / Processing)
- Sales & Marketing-Biomedical Equipment/Reagents (With Training in Sales)

ABOUT SCHOOL OF BIOLOGICAL SCIENCES:

School of Biological Sciences has been recognized as Centre for Excellence in Genomic Sciences (CEGS) by University Grants Commission (UGC, Govt. of India) and renders high quality education and research training in many areas including biomedical science and genomic science. The School is working to enrich and strengthen the young talents in the country by producing the competent M.Sc., and Ph.D., students. University Grants Commission (UGC), Govt. of India has recognized the School of Biological Sciences of Madurai Kamaraj University as Centre for Advanced Studies (CAS) in Functional and Organismal Genomics through several levels of infrastructural and financial assistance. Department of Biotechnology (DBT), Govt. of India, has supported School of Biological Sciences through the DBT-MKU Interdisciplinary Life Science Program (IPLS) for Advanced Research and Education with the establishment of state-of-the art core equipment facility for the education and research in the focused area of “Disease Diagnostics and Therapeutics”. Other supports and recognitions to the School include FIST (Fund for Improvement of S&T infrastructure in universities & higher educational institutions) support by Department of Science and Technology (DST), Govt. of India and UGC-NRCBS (Networking Resource Centre in Biological Sciences) by UGC, Govt. of India with equipment and infrastructure facilities. Apart from these programs, the faculty members of School of Biological Sciences have well established research laboratories with the grant support from DBT, DST, SERB, DAE, BRNS, ICMR, CSIR, UGC. The faculty members of the School are involved in cutting edge research in different aspects of Biomedical Science from basic to translational research. These establishments and research ambience would give a great and the best learning atmosphere to the M.Sc. Biomedical Science students at School of Biological Sciences, Madurai Kamaraj University.

RECOGNITIONS TO SCHOOL OF BIOLOGICAL SCIENCES:

- UGC-DSA Phase I, II & III and COSIST I & II, (1979 – 1999)
- UGC-CAS in Organismal & Functional Genomics, (Phase I, II & III) (2000-2017)
- UGC-Centre for Excellence in Genomic Sciences, Phase I & II (2002-2013) & Phase III, *under process*
- UGC-Networking Resource Centre in Biological Sciences, (2008-2017) & Phase II (2017-2022)
DBT – IPLS Programme (2010-2017) & Phase II under process
- DST- FIST Programme cycle I (2002-2007), cycle II (2010-2016) & Cycle III (2017-2022)

Infrastructure & Equipment Facility for Teaching and Biomedical Research Training at School of Biological Sciences, Madurai Kamaraj University

State-of-the-art laboratories for Research/Teaching

Major Equipment:

- LC-MS/MS
- Flow Cytometry
- Next Gen Sequencing
- High Content Screening
- Microarray
- Liquid Handling System
- Real Time PCR
- Animal Cell culture Facility
- Computer Lab for the students
- Wi-Fi access to students
- Access of E-Books to students
- Power Generators for Equipment
- Library with Online access to journals
- Smart Class Rooms
- Laboratories for Practicals
- Multiple Seminar Halls
- About 20 well equipped research labs in the campus



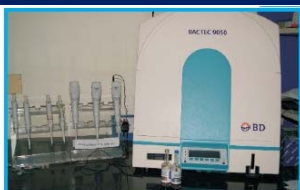
Infrastructure & Equipment Facility for Teaching and Biomedical Research Training at School of Biological Sciences, Madurai Kamaraj University



Infrastructure & Equipment Facility for Teaching and Biomedical Research Training at School of Biological Sciences, Madurai Kamaraj University



Fermenter



BACTEC - Blood Culture System



Ultra Centrifugation Facility



Epifluorescence Microscope



Protein Purification System



Lyophilizer



Preparative HPLC



PCR



Spectrophotometer



Genetic Analyzer



Ion Torrent



Fume Hood



ELISA Plate Reader



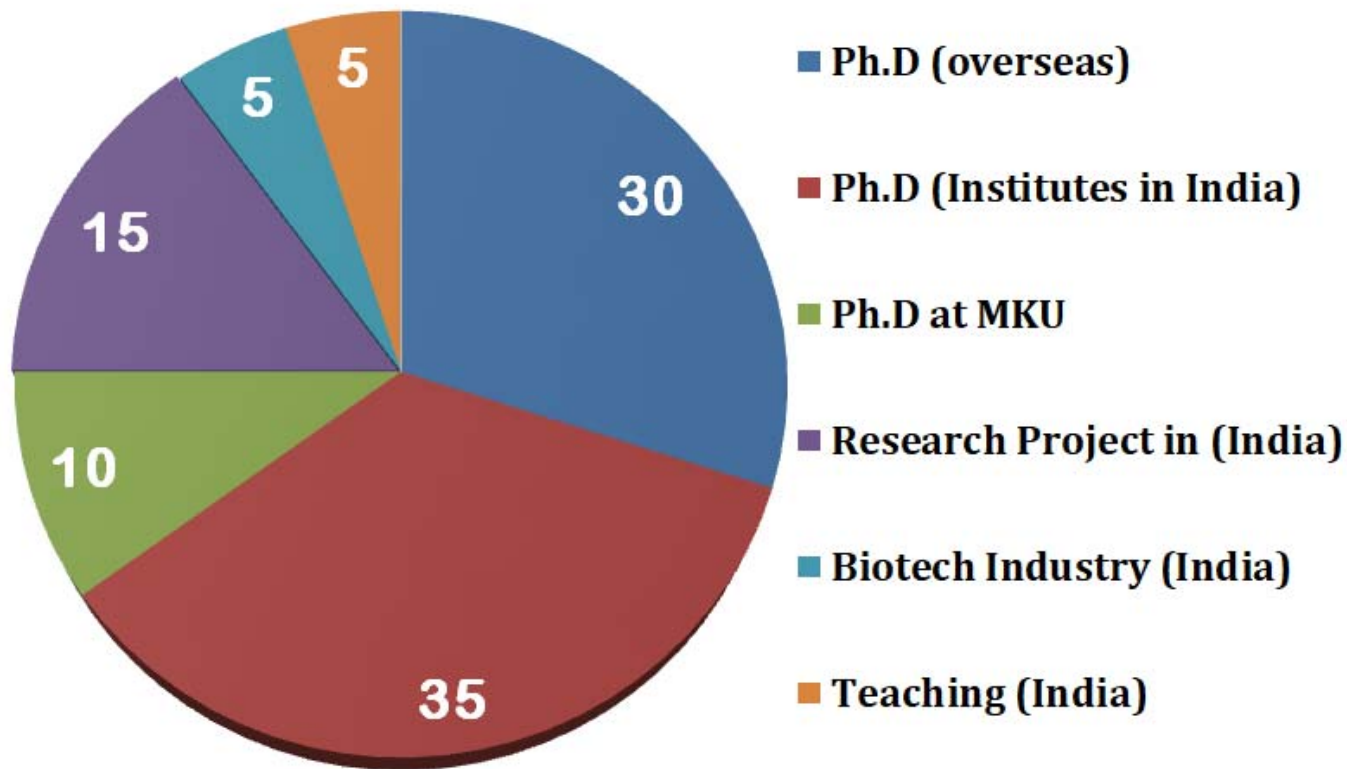
UVP Chemiluminescent Detection System



Ultrapure Water Purification System



Placement(%) of M. Sc. students from School of Biological Sciences, Madurai Kamaraj University in the Recent 10 Years



A brief list of the Ph.D placement details of M.Sc students from School of Biological Sciences, MKU in the recent Years

Ph.D in USA	Ph.D in India
Catholic University of America , USA	IIT, Chennai
Stony Brook University, New York	C.C.M.B., Hyderabad
University of Texas , Arlington, USA	I.I.Sc., Bangalore
MIT, USA	JNCASR, Bangalore
Ohio State University, USA	ACTREC
Southwestern University, US	BHU
State University of New York,USA	CCMB
Cornell University, New York, USA	CIA
Des Moines, Iowa, USA	DRDO
Georgia Tech., Atlanta, GA, USA	IGIB
Indiana State University, USA	IISER
Iowa State University, USA	IIT, Jodpur
Kent State University, Ohio, USA.	JIPMER
Louisiana State University, USA	JNU, New Delhi
Rochester University, USA	NCBS
University of Alberta, Canada	NCCS
University of Connecticut, USA.	NII
University of Florida, USA.	RGCB
University of Nebraska, USA	NII
University of Wyoming, USA	TIFR
Wayne State University, USA	University of Hyderabad
Ph.D in Germany	C.M.C., Vellore
Hannover Medical School, Germany	L.V.Prasad Eye institute
Heidelberg University, Germany	Hyderabad
Max Planck Institute,	Reliance Industries Limited,
Bielefeld University, Germany	Mumbai
Kyoto University, Germany	Sanjay Gandhi Post Graduate
Leibniz Institute of Neurobiology, Germany	Institute of Medical science,
Philip University, Germany	Lucknow
University of Calgary, Germany	
MaxDelbruck University,	
Student University of Osnabrueck,	
Germany	
University of Düsseldorf, Germany	