MGM UNIVERSITY
AURANGABAD

INSTITUTE OF BIOSCIENCES & TECHNOLOGY

PROFESSIONAL PG-DEGREE PROGRAM

M.SC. (BIOINFORMATICS)

Professional Degree Awarded	**B.Tech. (Bachelor of Technology)**
Duration of the Degree Program	**Two Years Research Program**
Semester	**Four (4)**
Intake	**20**
Tuition Fee	**Rs.1,00,000/-**

PROGRAM OVERVIEW

- Bioinformatics is a fast-growing field thatcombines biology and computer science to study biological data. The program aims to equip graduates with the computational skills needed to process, analyse and interpret the vast amounts of biological data now becoming available.
- The course is suitable for candidates of life sciences who want to learn programming and computational skills as well as forIT/computer science graduates who want to understand the molecular biology and become bioinformaticians.
- Our program provides the students specialized knowledge and practical experience for addressing contemporary problems in both academic and industrial setting.
- It seeks to provide the following: To advance education and research in Bioinformatics and explore sustainable solutions for agriculture, environment and energy sectors.
- It also imparts rigorous hands-on training in both laboratory-based methods and bio-informatics tools for biological research.

PROGRAM DESCRIPTION

- Our program cover in great depth a plethora of programming languages typically applied in bioinformatics, such as Perl, Python, Java, R and SQL, as well as modern web technologies, such as NoSQL and JavaScript and ML, Deep learning, and AI. Furthermore, we have two dedicated modules focusing on established bioinformatics protocols for the latest next generation sequencing (NGS) and 3rd generation sequencing (3GS) technologies.
- It enables you to learn about the science behind Bioinformatics while also looking at how to succeed in a career in the bio industry.
- You will learn how new start-up Bioinformaticscompanies are created, as well as about exploring the market potential of products and processes, creating business plans and raising wealth from venture capitalists.
- Our group enterprise projects, which involve close collaboration with entrepreneurs, provide a great opportunity for you to stand out from other graduates.

SPECIAL FEATURES

- Upon the completion of this course, you won't only have the skills and expertise to develop optimised bioinformatics tools for various tasks, but you will also find it relatively easier to learn new programming languages that were not covered during the course as you will have a strong foundation in interpreted, object-oriented, and statistically-focused languages.
- The program provides exposure tovarious fields of life sciences with its application in Bioinformatics. Enabling the student to understand the basic concepts by providing sufficient practical and theoretical knowledge
- It is designed to develop an inclination for entrepreneurship and also to provide an exposure to next-generation technologies.
- This program provides the basic and advanced academic, research, and industry-based curriculum consisting core, advanced, optional, and specific courses for the holistic development of students in life science
- Prepares the students for campus recruitment.

PROGRAM STRUCTURE

- Two-year program with68 choice-based credits to equate the professional degree
- Specialized experimental training with special attention to each individual through the 'Exploration Workshop'
- Special Open Elective course for students per semester
- Specialized labs with highly automated instruments
- Interactive learning with e-classrooms
- A complete package with an idea about various fields associated with bioinformatics and life sciences
- As a final year student, you will have an opportunity to undertake a project in the labs of our world-class bioscience researchers. To support our research, we have extensive research facilities equipped with high-quality technology.

PROGRAM CONTENTS

The curriculum provides ample opportunities to the students to specialize in several different areas likeConcepts & Principles of Genetics, Principles & Practice of Bioinformatics, Principles of Population Genetics, Introduction to Cytogenetics, Advances in QuantitativeGenetics, Radiobiology.

TEACHING AND LEARNING

- Our course is an integrated programme taught by researchers at the forefront of fields spanning bioinformatics, genomics and systems biology.
- Education is imparted through theory, practical, tutorials, seminars and supervised research projects. In this program you'll be taught by our proficient academician, well known scientist, industrialist from lecturers through to professors. The syllabus is based on bloom's taxonomy. Students will learn through practical oriental coursework. Well-equipped digital lecture hall Computer lab, Seminar hall, Workshop, problem-based learning etc

LEARNING FACILITIES

Our modern teaching labs are equipped for a range ofBioinformatics studies. The following are just a few of the techniques you could undertake during your degree:

- Drug discovery, Plant genetics,Data Analysis,"Omics" analysis, Prediction system develop, S/W development, etc.
- Our computing facilities include access to over 200 PCs in dedicated clusters and e-learning tools including online lecture notes, discussion boards, lecture podcasts and quizzes.
- You will also have access to the University's other facilities for undergraduate students.

RESEARCH FACILITIES

- Experience taught us that there is no such thing as a single preferred programming language in the field of bioinformatics. Every programming language has its own strengths and weaknesses depending on the task in hand. For example, Java can be quite powerful if you are developing a visualisation and/or standalone application, while R and Python are excellent choices for machine learning and statistical analysis. Perl, on the other hand, is a very easy programming language to learn by biologists and forms the foundation of most of the legacy tools and frameworks developed for the human genome project, and still being used to date.
- Drug discovery: Applications of bioinformatics in drug discovery is not only covered in the M.Sc. Bioinformatics course but is an integral part of the delivery of the course. Core members of the teaching team of this courseactively deliver several lectures and hands-on computational practical.
- In the Research Skills unit, you have the opportunity to carry out techniques that are widely used in current biological science research.
- Final year topics reflect the current hotspots of bioinformaticsendeavour and the research interests of our staff, and are constantly being updated. You will undertake an independent in-depth research project that may involve supervised practical work in a laboratory, or you may choose to work on e-learning, educational, data analysis, enterprise topics.

COURSEWORK AND ASSESSMENT

The relative weightage to the various examinations conducted, Course work, Group project, lab report, oral examination, poster presentation, research project, case study, study tour, Unit test, Quiz, Home Assignment, Seminar and record maintained during a semester shall be as under both for Program. Assessment is by Program work and written Semester End Examination which take place at the end of each semester in which the syllabus is taught.

DISABILITY SUPPORT

Practical support and advice for current students and applicants is available from the Disability Advisory and Support Service. Email: admin@mgmibt.com

PLACEMENTS AND CAREER OPPORTUNITIES

Our studetns may choose to work in Life Sciences Industry, IT industry, academia or bioinformatics industry. Career options also include to work as genome analyst, data analyst, geneticist, bioinformatician, software developer, database manager, & so on.You are not limited to the Life Sciences industries, however, and may go into a variety of careers.

ALUMNI

Our students were placed in different companies like Illumina, Strand Lifescience,Biomax informatics, Gene data, Bio matters, Collaborative Drug Discovery, Bio-Rad Laboratories, Bio base,Innoplerxus, Thermofisher, DNA nexus, Qlucore, CLC bio-Government and private colleges etc.

INDUSTRY COLLABORATION

At the MGMUIBT we know the value of working together. We break down barriers and get involved; we collaborate across disciplines, cultures to solve state, national and global problems; and we transform people's lives by making positive change across the India and world.

Partner with us today, and discover what a difference we could make to your-our-future. We engage with big companies to small scale companies likeMahyco, wockhardt, Metahelix, Jindal seeds, Ulman Lab, Matrix Life sciences, Probus, CFTRI, NIN, CIFE.

Contact us

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MGM University, established by the widely revered Mahatma Gandhi Mission Trust, is a self-financed State University. It has the 2(f) status of the University Grants Commission of India (UGC) and is approved by the Government of Maharashtra.

MGM Institute of Biosciences & Technology is a constituent college of **MGM University** from 2019. The institute has excellent infrastructure, and students can access all the facilities, in the areas of sports and culture, in the environs of the green, safe, and eco-friendly, **MGM Campus**.