

P R O G R A M M E PROJECT REPORT (PPR)

**POST GRADUATE DIPLOMA IN BIOINFORMATICS
(OPEN AND DISTANCE LEARNING MODE)**



School of Open And Distance Learning

JAMIA HAMDARD

(Deemed University)

Hamdard Nagar, New Delhi-110062

Jamia Hamdard

Late Janab Hakeem Abdul Hameed sb, the founder of Jamia Hamdard, had a vision to develop Jamia Hamdard into an institution of excellence imparting modern professional education with special emphasis on Unani medicine and Islamic studies. Today, it has evolved into an excellent centre of higher learning, fulfilling the objective of the *wakf*, which has been funding the University ever since its inception.

As a mark of tribute and thanks to the Almighty Allah for bestowing his guiding spirit to its founder and his associates, Jamia Hamdard adopted a seal inscribed with the following

“He (The Prophet may peace be upon him)

Instructs them in the Book and Wisdom”

Ever since the inception of Jamia Hamdard, this holy verse (*ayat*) has been a source of inspiration and guidance for all those associated with its management and administration. As an Islamic charity, *wakf* has played the vital financial role in the making of Jamia Hamdard. He (PBUH) preached his followers that

“Wisdom is (like) the lost animal of a believer

wherever he finds it, catches hold of it”

Inspired by the Holy Qur'an and exhorted by the Prophet (PBHU), Muslims became the torch-bearers of knowledge and civilization in the medieval period, but are lagging behind in present times. Late Hakeem Abdul Hameed Sahib wisely chose education and pursuit of knowledge as his prime objective when he decided to convert *Hamdard Dawakhana* into a *wakf*, a charity dedicated to fulfilling educational and health care needs of Indian Muslims. Hamdard (*wakf*) continues to provide generous grant to the university for building, equipments and salaries of staff and other development activities.

Jamia Hamdard was inaugurated by late Shri Rajiv Gandhi, the then Prime Minister of India, on August 01, 1989. In his impressive speech, the Prime Minister applauded the efforts of Hakeem Abdul Hameed Sahib in setting up institutions of higher learning, which were emerging in the form of a “Deemed to be University.” He said, “This will enable (the Muslim) minority to go forward and thus help India to march forward.”

The University offers professional courses, which equip the students to get placements in the highly competitive job market. On the basis of the record of performance of the University and quality of infrastructure including staff, the university has been accredited by NAAC in category ‘A’ of Indian Universities.

Mission & Objective

The Study programme aims to provide contemporary education and training to meet the challenges of the evolving global scenario and changing environment in business administration. The objective of the project is to help the students develop ability to apply multi-disciplinary concepts, tools and technique to solve organizational problem.

Jamia Hamdard Mission and Goal in relevance of the programme

Jamia Hamdard's study programmes under ODL are selective and customized to meet the learning requirements of knowledge seekers as well as to ensure that they learn at their own pace and convenience. Within the financial means of University, due care has been taken to keep the cost of education low, so that educationally backward sections can take advantage of University's programmes through ODL mode. This goal in view, the DODL of Jamia Hamdard has made concerted efforts to offer professional and job oriented courses with regular updates of curricula and study material and introduction of tools of Information Technology.

Targeted Group

The distance education has potential to reach to unreached and even marginalized and excluded group of the society such as tribal populations and Muslims women. Jamia Hamdard, SODL programme provides an opportunity to students for acquiring new knowledge and skills that are needed for their development. Jamia Hamdard being in education for a long time has taken initiatives to offer an opportunity to those students who are unable to get on campus education and those who have limited access to educational resources. ODL programme of Jamia Hamdard also envisage to provide an opportunity to girls from Muslim community, who by and large have been left out by the national education endeavors.

DEPARTMENT OF BIO-CHEMISTRY

Biochemistry is the molecular logic of living system. It finds applications in diverse disciplines such as medical and agricultural sciences, environmental sciences, forestry, dietetics, food science and technology, hormone production, vaccine research, virology, immunology, microbiology, toxicology and in areas from marine biology to entomology, not just to carry out the R&D work and develop new products, but also to monitor the production, quality and safety of the product. Biochemists provide diagnostic service, carrying out tests on blood, urine and other body fluids, while researching the underlying causes of disease and methods of treatment, and have opportunities to work in hospitals, pharmaceutical industry and agrochemical companies, food brewing and biotechnology. The postgraduate degree in Biochemistry also enables students to teach in universities and colleges as well as the medical, dental and veterinary schools and consulting or allied work. The Department offers an M. Sc. and Ph. D. program in Biochemistry and over the

years has gained reputation of being a center of quality education and training in Biochemistry both in India and abroad.

The Department has been awarded UGC SAP and DST FIST, in addition to a number of grants from various sources including a DBT grant for creating Bioinformatics Infrastructure Facility. The Department has also successfully completed a UNICEF sponsored ICMR task force study, and several other schemes supported by CSIR, DST, DBT, ICMR, CCRUM and UGC.

Thrust areas include:

- Chronic inflammatory diseases
- Cell proliferation and cell death pathways
- Cancer etiology; Nutrigenomics
- Molecular Biology and Proteomics
- Natural products in diabetic complications
- Molecular immunology; Insulin resistance

Over the years, the Department has developed facilities for high precision analytical work and has acquired sophisticated equipments and tools for cellular and molecular research including the facility to work on cell lines. The Department regularly organizes seminars, workshops, brain-storming and interactive sessions for the students, besides providing training to students and staff from other institutes, universities and colleges. The faculty actively participates in international and national conferences, seminars, workshops, meetings, orientation and refresher courses, and is on the panel of experts in various academic and nonacademic bodies. The Syllabus is updated regularly and promoting emerging areas such as computational and systems biology, nanotechnology. Students are encouraged for creative learning and to deliver lectures/debates on topics of current interest in biological sciences. Students have high rate of success in various competitive examinations and many of them are working in premier institutes and companies in India and abroad.

About 200 students of the department have qualified various national level tests since its inception in 1994. Students are working as scientist and academicians in government setups including DRDO, CSIR and Indian universities, besides taking up jobs in private sectors.

Programme offered through Open and Distance Mode

Apart from the full time regular courses, the department has decided to offer one programme through distance mode for those students who are not able to afford the expenses of education in Delhi or who have not been able to make it to the courses offered by the universities and colleges intuitional mode. However, our endeavor will be provide

best quality education, keeping with the traditions of Jamia Hamdard. The programme to be offered is:

Post Graduate Diploma in Bio informatics

Programme code 651

POST GRADUATE DIPLOMA IN BIO- INFORMATICS (PGDB) Programme code 651

OBJECTIVE

PGDB is aims to provide a step by step review of biological and chemical Literature through a curriculum of in-depth study. Students are also exposed to integration of information technology with biological science principles.

The Course

Highlights of the course are described in the following table:

a.	Name of the course	Post Graduate Diploma in Bio informatics (PGDB)
b.	Nature	Open and Distance Mode
c.	Duration	Minimum: 1 year (2 Semesters of Six months each) Maximum: 2 years
d.	Medium of Instruction and Examinations	English
e.	Eligibility Criteria Educational Requirements	A candidate who has passed B.Sc. in Biology, or B.Sc in Math/science with Biology as one of the subject in 10 + 2 examination of any recognized University shall be eligible for admission.
f.	Commencement of the course	January / July. Twice in a year
h.	Mode of Admission	As per the norms prescribed by Jamia

		Hamdard from time to time.
i.	Period of Completion (Span Period)	Not more than 02 years
j.	Fees	Rs. 9,000 per semester and 18,000/- per year)

Admission:

- a. A candidate, aspiring for admission to PGDB programme, shall have to apply in the prescribed application form that is complete in all respects, on or before the last date of submission.
- b. The Admission committee shall display/publish the list of candidates that are declared eligible for admission, after the due approval of the competent authority.
- c. Eligible candidates shall have to complete the prescribed formalities, for completion of admission, within the stipulated period of time; otherwise they will forfeit the right to admission.
- d. After having completed the formalities of admission, the candidate will be required to associate themselves with the course coordinator for the purpose of counseling and practicals.
- e. No Migration Certificate will be required for admission.

THE COURSE STRUCTURE

Papers	Nomenclature	Marks
PGDB 101	Introduction of Bio- informatics	100
PGDB 102	Bio-statistics	100
PGDB 103	Biological Databases and their Management	100
PGDB 104	Computational Biology	100
PGDB 105	Biochemistry	100
PGDB 106	Microbiology	100

PGDB 107	Basics of Bio-computing	100
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PGDB 101

(INTRODUCTION TO BIO-INFORMATICS)

S. No.	Topics
1.	What is Bio-Informatics
2.	Various Definitions of Bio-Informatics
3.	Bio-Informatics and Pharmaceutical Industry
4.	A Chronological History of Bio – Informatics
5.	Bio – Informatics in Business
6.	Bio-Informatics – Employment Opportunities

PGDB 102

(BIO-STATISTICS)

S. No.	Topics
1.	Introduction to Statistics
2.	Descriptive Statistics
3.	Probability
4.	Inferential Statistics
5.	Fisher Test
6.	Variations

7.	Vital Statistics and Manipulating Numbers
8.	Health Statistics
9.	Units and Conversion

PGDB 103

(BIOLOGICAL DATABASES AND THEIR MANAGEMENT)

S. No.	Topics
1.	Introduction to Database
2.	Introduction to Structured Query Language
3.	SQL* Plus
4.	SQL* Plus and Reporting
5.	SQL * Forms
6.	Menu
7.	Libraries
8.	Structured Query Language using Java
9.	Microbial Databases
10.	Cell Gene Bank Related Sites
11.	Virological Databases
12.	Biodiversity Databases
13.	Protein Sequence Database
14.	Nucleotide Sequence Database
15.	Structural Databases

PGDB 104

(COMPUTATIONAL BIOLOGY)

S. No.	Topics
1.	Data Mining and Sequence Analysis
2.	Database Searches
3.	Practical Aspects of Multiple Sequence Alignment
4.	Phylogenetic Analysis
5.	Predictive Methods using Nucleotide and Protein Sequences
6.	Submitting DNA Sequences to the Database

PGDB 105

(BIO - CHEMISTRY)

S. No.	Topics
1.	Amino Acid Metabolism
2.	Carbohydrates
3.	Lipid Metabolism
4.	Inborn Errors of Metabolism

PGDB 106

(MICROBIOLOGY)

S. No.	Topics
1.	History of Microbiology
2.	Scope of Microbiology
3.	Classification of Microbes
4.	Microbial Cell Structure

5.	Nutrition and Growth of Bacteria
6.	Bacterial Genetics

PGDB 106

(BASICS OF BIO-COMPUTING)

S. No.	Topics
1.	Computer Fundamentals
2.	Windows 98: Advance Concepts
3.	Internet Architecture and Framework
4.	Microsoft Word
5.	Microsoft PowerPoint
6.	Microsoft Excel
7.	Unix
8	Visual Basic 6.0

For the one-year programme, every core subject will have one paper, carrying a maximum of 100 marks.

In order to pass in any session of the programme and examinee must obtain a minimum of 40% of total marks for each course subject in the session of examination. Candidates who pass in each of the courses will qualify for the award of PGDB in determining the result of the entire programme aggregate of performance of the students. Students securing 60% and more marks will be placed in first class, those securing 50% or more but less than 60% will be placed in second class and those securing 40% or more but less than 50% in third class.

There shall be supplementary examination giving only one chance to candidates who fail in only one exam paper. This supplementary exam will be held along with the next main exam.

The delivery of the programme consists of audio/video support/assignments, contact classes, library consultation etc. A minimum of 60% of attendance in contact classes,

submission of assignments will be necessary conditions for the eligibility of the candidate, to appear in session end examination.

Students' Support Services

The coordinators of the respective courses would display a copy of such important circulars/ notifications on the notice board for the benefit of all the students. Therefore, it is important for all the students to keep in regular touch with the Jamia Hamdard so as to get advance information about assignments, submission schedule, examination forms, list of students admitted to particular examination, declaration of results, etc.

Supply of Study Material

One book per course will be supplied to the students as study material. However, the fast pace of computer industry necessitates that students must read some other reference materials. Studying the supplied printed material alone may not be sufficient for the knowledge of the subject. Therefore, it is strongly recommended that the students take the help of other reference materials/ websites for the preparation of their assignments and other examinations.

Counseling Sessions

In distance education, face -to-face contact between the learners and their teachers/ counselors is relatively less and, therefore, is an important activity. The purpose of such a contact is to answer some of the questions and clarify the doubts, which may not be possible through any other means of communication. It also intends to provide an opportunity to meet the fellow students. There are academic counselors at the Jamia Hamdard to provide counselling and guidance to the students in the courses. These sessions will be held at the Study Centers during weekends (**Saturdays and Sundays**)

It may be noted that the counseling sessions would be very different from the classroom teaching or lectures. Counsellors will not be delivering lectures as in conventional teaching. They will try to help the students to overcome difficulties, which they face while studying for the Programme. In these sessions, they must try to resolve their subject-based difficulties and any other related problems.

Before the students go to attend the counselling sessions, they are expected to go through the course materials supplied to them and make a plan of the points to be discussed. Unless they have gone through the Units, they may not find much to be discussed with course counsellors.