

**MASTER OF SCIENCE
IN
BIONANOTECHNOLOGY**

**PROGRAM STRUCTURE AND SYLLABUS
2019-20 ADMISSIONS ONWARDS**

(UNDER MAHATMA GANDHI UNIVERSITY PGCSS REGULATIONS 2019)



**EXPERT COMMITTEE OF BIOSCIENCE (PG)
MAHATMA GANDHI UNIVERSITY**

2019

M.Sc. BIONANOTECHNOLOGY

(Mahatma Gandhi University Regulations PGCSS2019 from 2019-20 Academic Year)

1. Aim of the Program

The aim of the programme is to highlight the importance of biological components in the field of nanotechnology. It is designed as to give the student an understanding of the nanostructures existing in nature at cellular and molecular level and to appreciate how this understanding of these self-assembling or multifunctional systems at a nano-scale finds application in diverse fields. The program seeks to provide the following: to advance education and research in Bionanotechnology and explore sustainable solutions for agriculture, environment and energy sectors.

2. Eligibility for Admissions

B.Sc. Chemistry, Physics, Biochemistry, Biotechnology, Bioinformatics, Microbiology, Botany/ Plant Science, Forestry, Zoology/Animal Science, Life Sciences, Nanotechnology, Biophysics, Environmental Science, Food Science, B.Tech Biomedical Engineering, B.Tech. Biotechnology, B. Tech Bioinformatics, B. Tech. Nanotechnology, B.Sc in Medical Laboratory Technology, B.Sc. Electronics, B.Sc. Agriculture, B.Voc. Agriculture, M.B.B.S, B.A.M.S., B.S.M.S. and B.V.Sc. with not less than CGPA of 2.00 out of 4.

3. Medium of Instruction and Assessment

Course of study will be over a period of two academic years under semester system

a. Scheme of examination

The examinations for the award of degree consist of theory and practical papers, dissertation and comprehensive viva-voce. There will be examinations at end of each semester for theory and practical courses. Each semester consists of four theory paper and one practical examination for the first three semesters. The fourth semester has project presentation and evaluation and comprehensive viva-voce in addition to one practical examination and **three theory papers which are exclusively based on elective courses.**

b. Dissertation

Each candidate should submit a dissertation in four copies of the research project undertaken by him/her at the end of fourth semester for evaluation.

c. Comprehensive viva-voce

A comprehensive viva-voce will be held at the end of the fourth semester covering all the courses of the programme taught in the entire four semesters.

4. Faculty under which the Degree is awarded

Faculty of Science



8. PROGRAMME STRUCTURE

Course Code	Title of the Course	Type of the Course	Hours per week	Credits	Total Credits
FIRST SEMESTER					
BS040101	Introduction to Cell Biology	Core	4	4	19
BS040102	Biomolecules And Metabolism	Core	4	4	
BS040103	Genomics And Molecular Biology	Core	4	4	
BS040104	Bioanalytical Techniques and Bioinformatics	Core	3	3	
BS040105	Laboratory Course I	Core	10	4	
SECOND SEMESTER					
BS040201	Introduction to Bionanotechnology	Core	4	4	19
BS040202	Biomimetics and Bionics	Core	4	4	
BS040203	Bionanofabrication and Tissue Engineering	Core	4	4	
BS040204	Proteomics and Protein Engineering	Core	3	3	
BS040205	Laboratory Course II	Core	10	4	
THIRD SEMESTER					
BS040301	Synthesis, Characterization and Applications of Nanomaterials	Core	4	4	19
BS040302	Research Methodology	Core	4	4	
BS040303	Immunology and Molecular Diagnostics	Core	4	4	
BS040304	Nano-Bio Interactions	Core	3	3	
BS040305	Laboratory Course - III	Core	10	4	

Course Code	Title of the Course	Type of the Course	Hours per week	Credits	Total Credits
FOURTH SEMESTER					
BS890401	Electives Group A	Nanotoxicology	Elective	5	4
BS890402		Green Nanotechnology	Elective	5	4
BS890403		Nanomedicine	Elective	5	4
BS900401	Electives Group B	IPR & Translational Research	Elective	5	4
BS900402		Nanotechnology in Forensic Science	Elective	5	4
BS900403		Bionanotechnology in Food Industry	Elective	5	4
BS910401	Electives Group C	Industrial Trends and Applications of Nanotechnology	Elective	5	4
BS910402		Societal Impacts of Nanotechnology	Elective	5	4
BS910403		Cancer Nanotechnology	Elective	5	4
BS040401	Laboratory course IV		Core	10	4
BS040402	Research Project & dissertation		Core		5
BS040403	Comprehensive Viva-Voce		Core		2
TOTAL				80	23



8.1 LIST OF ELECTIVE PAPERS

Course Code	Title of the Course	
BS890401	Electives Group A	Nanotoxicology
BS890402		Green Nanotechnology
BS890403		Nanomedicine
BS900401	Electives Group B	IPR & Translational Research
BS900402		Nanotechnology in Forensic Science
BS900403		Bionanotechnology in Food Industry
BS910401	Electives Group C	Industrial Trends and Applications of Nanotechnology
BS910402		Societal Impacts of Nanotechnology
BS910403		Cancer Nanotechnology

