



Vanita Vishram Women's University

(1st Women's University of Gujarat)

University Approved by Government of Gujarat
Under the Provisions of
Gujarat Private Universities Act, 2009



School of Science and Technology

(UG)

**B.Sc. in Chemistry, Microbiology, Biotechnology & B.C.A.
(Honours)**

Introduction of the Course :

It is a three-years undergraduate course offered after the completion of 10+2 schooling. The course aims to provide broad and balanced knowledge in chemistry in addition to understanding of key chemical concepts, principles and theories. It will provide knowledge and skill to the students and enable them to undertake further studies in chemistry, whether in related areas or multidisciplinary areas that can be helpful for self-employment/ entrepreneurship. The course is designed to provide intellectual and laboratory skills according to the UGC module for CHOICE BASED CREDIT SYSTEM (CBCS) pertaining to B.Sc. Honours (Chemistry).

Programme Specific Objectives (PSOs) :

- To provide knowledge of chemistry with board and balanced aspects.
- Development of laboratory analysis skills.
- To develop critical thinking approaches for problem-solving.
- To provide skill base training to hold out in the current competitive environment.
- Multidisciplinary approach for overall development.

Programme Specific Outcomes (PSOs) :

- Identifying chemistry related problems, analysis and application of data using appropriate methodologies.
- Finding opportunity to apply subject-related skills for acquiring jobs and self-employment.
- Understanding new frontiers of knowledge in chemistry for professional development.
- Applying subject knowledge for solving social problems related to application of chemistry in day-to-day life.
- Applying subject knowledge for sustainable environment friendly green initiatives.

Minimum Required Eligibility :

- Passed 10+2 from a recognized Board in Science stream.
- Chemistry as one of the mandatory subjects in 10+2 (Groups A, B & AB).

Duration of the Programme :

- 3 Years

Salient Features of the Programme/Course :

- Based on UGC-LOCF (University Grants Commission – Learning Outcomes-based Curriculum Framework).
- In accordance with the to-be-implemented NEP (National Education Policy, 2020).
- Interdisciplinary as well as multidisciplinary.
- Practical-oriented, skill-based & vocation-based.
- Based on experiential learning.
- Greater exposure to internship, hands-on training, project work, field work, presentation etc.
- Mode of teaching shall be hybrid (Online + Offline)
- Qualified & Competent Faculty Members for effective teaching-learning
- Employment-Generating

Fee Structure :

Semester 1
Rs. 15,600/-

Semester 2
Rs. 12,950/-

Semester 3
Rs. 14,600/-

Semester 4
Rs. 13,850/-

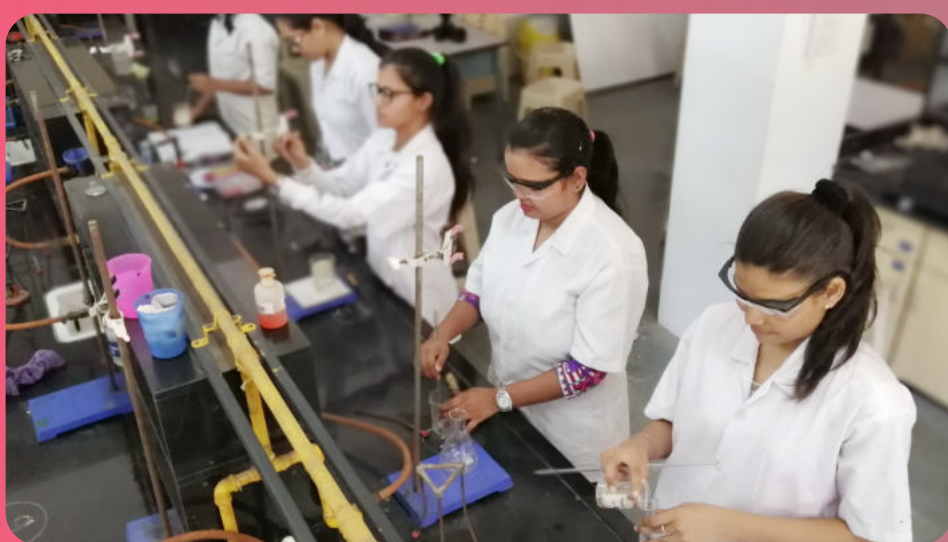
Semester 5
Rs. 15,590/-

Semester 6
Rs. 14,840/-

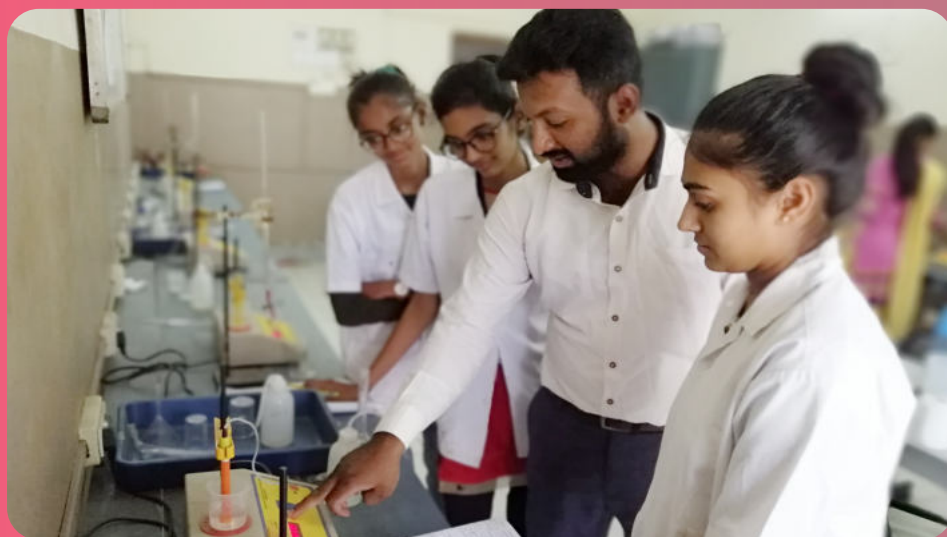
Infrastructure :



**V. Ramakrishna
Chemistry Lab**



**C.N.R. Rao
Chemistry Lab**



**F.W. Ostwald
Physical Chemistry Lab**

Course Structure :

B.SC. CHEMISTRY HONOURS (SEMESTERS 1 & 2)

	Semester 1	Semester 2
Core Course	<ul style="list-style-type: none"> ● Inorganic & Physical Chemistry-I Inorganic Chemistry Practical-I ● Organic Chemistry-I Organic Chemistry Practical-I 	<ul style="list-style-type: none"> ● Inorganic & Physical Chemistry-II Inorganic Chemistry Practical-II ● Organic Chemistry-II Organic Chemistry Practical-II
Discipline Specific Elective Courses	-	-
Skill Enhancement Courses	-	-
Generic Elective Courses	Refer to the List of Generic Elective Courses	Refer to the List of Generic Elective Courses
Ability Enhancement Compulsory Courses	Communication Skills in English & Environmental Studies	<ul style="list-style-type: none"> ● Good Laboratory Practices ● Chemistry of food, Nutrition & Preservation ● Chemistry in Everyday Life ● Introduction to Forensic Science & Technology (ANY TWO)

Job opportunities :

- Teacher/Professor
- Analyst in Chemical Industries
- Laboratory In-charge in Forensic Science
- Analyst in Water Treatment Plants
- Pharmacy Assistant
- Content Developer
- Medical Representative
- IPR and Patent Filing
- Entrepreneur
- Environmental Agencies
- Dairy and Fermentation Industries

List of Generic Papers For B.Sc. Chemistry Students :

Semester 1

Psychology in Everyday Living

Phonetics & Grammar

Science, Technology & Society

Micro Economics for Managers

Business Economics

Microbial World & Microbial Diversity

Ecology & Environment Management

Trigonometry

Mechanics & Properties of Matter

Office Application

Semester 2

Psychology & Mental Health

Academic Writing & Composition

Age of Rationalism, Humanism & Rise of the Modern World

Indian Business Environment

Mathematics for Business

Bacteriology & Virology

Marine Biotechnology

Differential Calculus

Waves & Oscillations & Optics

Introduction to Linux

Note: Choose ANY ONE in each Semester.

Introduction of the Course :

Microbiology is the study of microorganisms such as bacteria, viruses, fungi, algae, cyanobacteria, protozoa and prions. They are extremely important as their diverse activities range from causation of deadly diseases in humans, animals and plants to production of highly useful products like antibiotics, enzymes, alcohol, fermented foods, and recycling of dead and decaying organic matter in the nature. Thus, the science of microbiology has an important role to play in health, agriculture, environment and industry. Several discoveries in the last two to three decades, which significantly impact these areas have put Microbiology on the center stage of teaching, research and development all over the globe.

A new system called Learning Outcomes-based Curriculum Framework (LOCF) under the recommendations and guidance of University Grants Commission (UGC) has envisioned the programme learning outcomes of the B.Sc. (Hons) program in Microbiology as well as the learning outcomes of the courses under this programme, keeping in view the graduate attributes of the subject. The curriculum was thus developed in tune with the learning outcomes. It is envisaged that the students trained under this curriculum will have the required attributes of knowledge, skills, temperament and ethics related to the subject of Microbiology.

Programme Specific Objectives (PSOs) :

- **Knowledge acquisition and probing the future.**
- **Core microbiology laboratory skills attainment.**
- **Realization of Interdisciplinary approach of Microbiology.**
- **Apprehending Environmental literacy.**
- **Field Exposure & Awareness of Ethics.**

Programme Specific Outcomes (PSOs) :

- **Acquired knowledge and understanding of the microbiology concepts as applicable to diverse areas such as medical, industrial, environment, genetics, agriculture, food and others.**
- **Demonstrate key practical skills/competencies in working with microbes for study and use in the laboratory as well as outside, including the use of good microbiological practices.**
- **Explain why microorganisms are ubiquitous in nature; inhabiting a multitude of habitats and occupying a wide range of ecological habitats, their role in these ecological niches, influence of microbiome on our health, environmental clean-up, variety of industrial product development, and their significance in human wellbeing.**

- **Competent enough to use microbiology knowledge and skills to analyze problems involving microbes, learning use of microbes as a model organism to understand facts about living systems, analyze the genetic makeup of different types of microbes, articulate these with peers/ team members/ other stake holders through effective communication, and undertake remedial measures/ studies etc.**

- **Developed a broader perspective of the discipline of Microbiology to enable him to identify challenging societal or global, economical, environmental, energy-related and other problems and plan his professional career to develop innovative solutions for such problems.**

Minimum Required Eligibility :

- **Passed 10+2 from a recognized Board in Science stream.**
- **Biology as one of the mandatory subjects in 10+2 (Groups B & AB).**

Duration of the Programme :

- **3 Years**

Salient Features of the Programme/Course :

- **Based on UGC-LOCF (University Grants Commission – Learning Outcomes-based Curriculum Framework).**
- **In accordance with the to-be-implemented NEP (National Education Policy, 2020).**
- **Interdisciplinary as well as multidisciplinary.**
- **Practical-oriented, skill-based & vocation-based.**
- **Based on experiential learning.**
- **Greater exposure to internship, hands-on training, project work, field work, presentation etc.**
- **Mode of teaching shall be hybrid (Online + Offline)**
- **Qualified & Competent Faculty Members for effective teaching-learning**
- **Employment-Generating**

Fee Structure :

Semester 1
Rs. 15,600/-

Semester 2
Rs. 12,950/-

Semester 3
Rs. 14,600/-

Semester 4
Rs. 13,850/-

Semester 5
Rs. 15,590/-

Semester 6
Rs. 14,840/-

Infrastructure :



**Suniti Solomon
Microbiology Lab**



**Robert Koch
Microbiology Lab**



**Louis Pasteur
Microbiology Lab**

Course Structure :

B.SC. MICROBIOLOGY HONOURS (SEMESTERS 1 & 2)

	Semester 1	Semester 2
Core Course	<ul style="list-style-type: none"> ● Microbial World and Principles of Microbiology ● Prokaryotic Microbes (Archaea & Bacteria) : Basics and Systematics 	<ul style="list-style-type: none"> ● Basic Biochemistry ● Microbial Techniques & Instruments
Discipline Specific Elective Courses	-	-
Skill Enhancement Courses	-	-
Generic Elective Courses	Refer to the List of Generic Elective Courses	Refer to the List of Generic Elective Courses
Ability Enhancement Compulsory Courses	Communication Skills in English & Environmental Studies	Communication Skills in English & Environmental Studies

Job opportunities :

Scope in Academics	Job prospects in Industries	A Microbiologist can be...
<ul style="list-style-type: none"> ● M.Sc. with ● Microbiology ● Biotechnology ● Biochemistry ● Environmental Science ● Bioscience ● Industrial Microbiology ● Dairy & Food Microbiology ● Clinical Biochemistry ● Medical Microbiology ● Biomedical Technology ● Medical Technology ● Agricultural Microbiology ● D.M.L.T. ● C.M.L.T. ● M.B.A. 	<ul style="list-style-type: none"> ● Pathology Laboratory ● PHCs/CHCs ● Pharmaceuticals ● Diagnostics ● Dairy Industry ● Environmental Science ● Fermentation Industry ● Food and Safety Department ● Forensic Laboratory ● Agriculture ● Clinical Research ● Research Organization ● Nanotechnology ● IPR and Patent Filing 	<ul style="list-style-type: none"> ● Pathology Technician ● Technologist ● Food Inspector ● Sanitary Inspector ● Lab. Assistant ● Project Assistant ● Quality Control Microbiologist ● Quality Assurance Microbiologist ● Fermentation Technologist ● Academician ● Researcher ● Scientific Writer ● Medical Transcriptionist ● Entrepreneur

List of Generic Papers For B.Sc. Microbiology Students :

Semester 1	Semester 2
Psychology in Everyday Living	Psychology & Mental Health
Phonetics & Grammar	Academic Writing & Composition
Science, Technology & Society	Age of Rationalism, Humanism & Rise of the Modern World
Micro Economics for Managers	Indian Business Environment
Business Economics	Mathematics for Business
Fundamental of Inorganic & Organic Chemistry	Fundamental of Organic & Physical Chemistry
Ecology & Environment Management	Marine Biotechnology
Mechanics & Properties of Matter	Waves & Oscillations & Optics
Office Application	Introduction to Linux

Note: Choose ANY ONE in each Semester.

Introduction of the Course :

It is a three-years UG degree program. It involves the study of living organisms, biological systems and use of advanced technology to study the same. The course can create professionals who could improve the quality of human life and the health of the planet by the products of biotechnology. Biotechnology is a broad discipline in which biological processes, organisms, cells or cellular components are exploited to develop new technologies. New tools and products developed by biotechnologists are useful in research, medicine (development of new medicines, vaccines, hormones, insulin therapies etc.), agriculture (development of genetically modified plants i.e., BT cotton, seedless fruits; biofuels, biological treatment, biofertilizers etc.) environment (biofuels, waste water treatment, biodegradation of hydrocarbons, pesticides etc.) and industry (production of chemicals, paper, textiles and food). Depending on the tools and applications, it often overlaps with related scientific fields. In the late 20th and early 21st centuries, Biotechnology has expanded to include new and diverse sciences, such as genomics, recombinant gene techniques, applied immunology, bioinformatics, biostatistics, microbiology, biochemistry and development of pharmaceutical therapies and diagnostic tests.

Programme Specific Objectives (PSOs) :

- To give the knowledge of biological science, technology as well as entrepreneur skills to apply it for human welfare.
- To strengthen the fundamentals in basic subjects through in-house state of art laboratory exposures and project work fostering global competencies among students.
- To develop critical thinking, an ability to solve, analyze and interpret data generated from experiments to meet the need of industry and research.
- To make learners understand about bioethical aspects, safety aspects and their responsibilities towards the mankind and environments.
- To enhance career opportunities in academy and industry by providing hands on practice in all the disciplines of biotechnology to young aspirant.

Programme Specific Outcomes (PSOs) :

Upon the completion of the B.Sc. (Hons.) Biotechnology programme, the candidate should be able to:

- Understand the concepts and research approaches for their higher career in the field of biotechnology and develop their scientific interest.

- Apply knowledge for in-depth analytical and critical thinking to identify and resolve the problems related to Biotechnology Industry, Medical or hospital related organizations, Regulatory Agencies, Environmental problems & Academia.
- Demonstrate skills to use modern analytical tools/ software/ equipment's and analyze the results used in industry and research through an inter-disciplinary learning habitat.
- Appreciate and execute their professional roles in society as biotechnology professionals, employers and employees in various industries, regulators, researchers, educators and managers.
- Adopt code of ethics in professional and social context and demonstrate exemplary professional, ethical and legal behaviors in decision making.

Minimum Required Eligibility :

- Passed 10+2 from a recognized Board in Science stream.
- Biology as one of the mandatory subjects in 10+2 (Groups B & AB).

Duration of the Programme :

- 3 Years

Salient Features of the Programme/Course :

- Based on UGC-LOCF (University Grants Commission – Learning Outcomes-based Curriculum Framework).
- In accordance with the to-be-implemented NEP (National Education Policy, 2020).
- Interdisciplinary as well as multidisciplinary.
- Practical-oriented, skill-based & vocation-based.
- Based on experiential learning.
- Greater exposure to internship, hands-on training, project work, field work, presentation etc.
- Mode of teaching shall be hybrid (Online + Offline)
- Qualified & Competent Faculty Members for effective teaching-learning
- Employment-Generating

Fee Structure :

Semester 1
Rs. 15,600/-

Semester 2
Rs. 12,950/-

Semester 3
Rs. 14,600/-

Semester 4
Rs. 13,850/-

Semester 5
Rs. 15,590/-

Semester 6
Rs. 14,840/-

Infrastructure :



**J. V. Bhat
Biotechnology Lab**



Course Structure :

B.SC. BIOTECHNOLOGY HONOURS (SEMESTERS 1 & 2)

	Semester 1	Semester 2
Core Course	<ul style="list-style-type: none"> ● Introduction to Biotechnology ● Biochemistry and Metabolism 	<ul style="list-style-type: none"> ● Eukaryotic Physiology ● Cell Biology
Discipline Specific Elective Courses	-	-
Skill Enhancement Courses	-	-
Generic Elective Courses	Refer to the List of Generic Elective Courses	Refer to the List of Generic Elective Courses
Ability Enhancement Compulsory Courses	Communication Skills in English & Environmental Studies	Communication Skills in English & Environmental Studies

Job opportunities :

- Teacher/Professor
- Pharmaceutical Industry
- Environmental Agencies
- Government, Semi-government and Private Institutes
- Laboratory Technician
- Clinical Research Organization
- Quality Control Officer
- Quality Assurance Officer

- **Fermentation Industry**
- **Dairy Industry**
- **Food and Drink Manufacturers**
- **Food Safety Inspector**
- **Water Industry**
- **Agriculture**
- **Horticulture Industry**
- **Bioinformaticians**
- **IPR & Patent Filing**
- **Entrepreneur**

List of Generic Papers For B.Sc. Biotechnology Students :

Semester 1

Psychology in Everyday Living

Phonetics & Grammar

Science, Technology & Society

Micro Economics for Managers

Business Economics

Fundamental of Inorganic & Organic Chemistry

Microbial World and Microbial Diversity

Mechanics & Properties of Matter

Office Application

Semester 2

Psychology & Mental Health

Academic Writing & Composition

**Age of Rationalism, Humanism & Rise of the
Modern World**

Indian Business Environment

Mathematics for Business

Fundamental of Organic & Physical Chemistry

Bacteriology and Virology

Waves & Oscillations & Optics

Introduction to Linux

Note: Choose ANY ONE in each Semester.

Introduction of the Course :

Bachelor of Computer Application is a UG program offered by VVWU. This course is of three years duration with two semesters in each year. The course is designed to make sure that students learn from basic computing to latest technologies in IT. The curriculum offers perfect blend of theory and practical.

Programme Specific Objectives (PSOs) :

- **To educate students regarding logic and algorithm.**
- **To impart knowledge of programming languages and database concepts.**
- **To expose the students to networking and graphics.**
- **To provide hands-on experience of IT projects to the students.**
- **To develop entrepreneurial skills of the students so that they can launch their**

Programme Specific Outcomes (PSOs) :

The students will be able:

- **To understand the underlying programming logic of writing code.**
- **To apply the concepts of software engineering.**
- **To create and manage database using the concept of RDBMS.**
- **To develop applications using programming languages.**
- **To promote personal growth and understanding of self.**

Minimum Required Eligibility :

- **12th Pass from Science/ Commerce or Vocation stream**
- **12th Pass from any Stream / recognized Board or its Equivalent**
- **Minimum aggregate score of 50% in Class XII**

Duration of the Programme :

- 3 Years

Salient Features of the Programme/Course :

- Based on UGC-LOCF (University Grants Commission – Learning Outcomes-based Curriculum Framework).
- In accordance with the to-be-implemented NEP (National Education Policy, 2020).
- Interdisciplinary as well as multidisciplinary.
- Practical-oriented, skill-based & vocation-based.
- Based on experiential learning.
- Greater exposure to internship, hands-on training, project work, field work, presentation etc.
- Mode of teaching shall be hybrid (Online + Offline)
- Qualified & Competent Faculty Members for effective teaching-learning

Fee Structure :

Semester 1
Rs. 22,100/-

Semester 2
Rs. 19,450/-

Semester 3
Rs. 21,700/-

Semester 4
Rs. 20,950/-

Semester 5
Rs. 23,350/-

Semester 6
Rs. 22,600/-

Infrastructure :



Course Structure :

B.C.A. HONOURS (SEMESTERS 1 & 2)

	Semester 1	Semester 2
Core Course	<ul style="list-style-type: none"> ● Programming using C ● Programming Methodologies 	<ul style="list-style-type: none"> ● Operating System ● Data Structure using C
Discipline Specific Elective Courses	-	-
Skill Enhancement Courses	-	-
Generic Elective Courses	Refer to the List of Generic Elective Courses	Refer to the List of Generic Elective Courses
Ability Enhancement Compulsory Courses	Communication Skills in English & Environmental Studies	Communication Skills in English & Professional & Moral Ethics

Job opportunities :

- IT Executive
- Computer Programmer
- Software Developer
- Computer System Analyst
- Network Manager
- Freelancer
- Database Administrator
- Graphics Designer
- Web Developer
- Service Support Specialist
- Start-ups / Entrepreneur
- Teacher

List of Generic Papers For B.C.A. Students :

Semester 1

Psychology in Everyday Living

Phonetics & Grammar

Science, Technology & Society

Micro Economics for Managers

Business Economics

Fundamental of Inorganic & Organic Chemistry

Microbial World & Microbial Diversity

Ecology & Environment Management

Semester 2

Psychology & Mental Health

Academic Writing & Composition

Age of Rationalism, Humanism & Rise of the Modern World

Indian Business Environment

Mathematics for Business

Fundamental of Organic & Physical Chemistry

Bacteriology & Virology

Marine Biotechnology

Note: Choose ANY ONE in each Semester.

State-of-the-art Facilities

On Campus Hostels



Annexe Building



Well Equipped Laboratories Where Passion Meets Creativity & Science

23



Sports Complex & Playground



Seminar Halls



