

## Department of Microbiology

Microbiology is a branch of science that ~~deals~~ explores with microscopic organisms. ~~Microbiology is the name for knowing everything about their distribution in nature, their interrelationships, their effects on humans, animals, and plants, and their reactions to physical and chemical agents in the environment. The branch of science that deals with microbes and microorganisms is called microbiology. All of the information regarding their distribution across nature, interactions with one another, impacts on people, animals, and plants, as well as how they respond to physical and chemical agents in the environment, is known as microbiology. Characteristics of germs, methods of propagation, ways to escape from evil and harmful germs, and benefits, these issues are the subject of continuous research in microbiology. Microbiologists are always researching the properties of germs, how they spread, how to protect yourself from dangerous pathogens, and their advantages.~~ **Shaheed Shamsuzzoha Institute of Biosciences, Rajshahi** has provided opportunities for study and research in this regard.

### Scope and future of microbiology

Microbiology is a field of science that ~~deals~~ explores with the study of microorganisms, such as bacteria, viruses, fungi, and protozoa. ~~These tiny organisms play a crucial role in various aspects of our lives, from the food we eat to the air we breathe. These microscopic creatures are essential to everything in our life, including the food we consume and the air we breathe. The scope of microbiology is vast field. Over the years, the development of microbiology has been seen in the fields of medicine, pharmacy, clinical research, dairy industry agriculture, water industry, and Chemical Technology. The study of microbiology has advanced over time in a number of industries, including chemical technology, medicine, pharmacy, clinical research, dairy farming, and agriculture. In the near future, microbiology will focus on the development of new treatments for diseases, from antibiotics to vaccines. on development of novel drugs, such as vaccines and antibiotics, to treat illnesses. Scientists will be able to treat diseases like cancer, HIV, and other infectious diseases with more specialized drugs as they learn more about the genetics and behavior of microbes. As new discoveries are made about the genetics and behavior of microorganisms, scientists will develop more targeted treatments for conditions such as cancer, HIV, and other infectious diseases.~~

### Carrier Opportunities

After studying Microbiology, there are bright possibilities for a multi-faceted career in professional life. Pharmaceutical Industry, Food and Beverage Industries, Biotechnology Farms, Chemical and Agri-Industry, Hospital Laboratories, Diagnostic Centers, Power Plants, Health Technology Institutes, Research Centers, and Health Departments. There are also opportunities to work in the pharmaceutical industry to ensure the quality of drugs or to discover new vaccines.

Some of these most remunerative career opportunities include the following:

- ❖ Research Assistant
- ❖ Food, Industrial or Environmental Microbiologist
- ❖ Quality Assurance Technologist
- ❖ Sales or Technical Representative
- ❖ Clinical and Veterinary Microbiologist
- ❖ Medical Technologist
- ❖ Biomedical Scientist
- ❖ Clinical Research Associate
- ❖ Microbiologist
- ❖ Pharmacologist
- ❖ Food Technologist
- ❖ Scientific Laboratory Technician
- ❖ Physician Associate
- ❖ Research Scientist (life sciences)

Upon the completion of B.Sc. in Microbiology the students can also work with some of the best Biotech and Pharmaceutical Companies. Some of these top companies include the following:

- ❖ ACME Laboratories Ltd.
- ❖ Incepta Pharmaceutical Ltd.
- ❖ Square Pharmaceuticals
- ❖ Beximco Pharmaceuticals Ltd.
- ❖ Drug International Limited
- ❖ Aristopharma Ltd.
- ❖ ACI
- ❖ Oponin Pharma Limited
- ❖ Eskayef Pharmaceuticals Ltd.
- ❖ Renata Limited
- ❖ Healthcare Pharma
- ❖ General Pharma

- ❖ Ibn Sina
- ❖ Reneta limited
- ❖ Popular Pharma

## Employment Sectors for Microbiology Students

Depending on their educational background and areas of interest, microbiology students can find employment in a wide range of sectors. Among the most popular sectors for microbiologists are:~~There are many different employment sectors for microbiology students, depending on their level of education and their specific interests. Some of the most common sectors for microbiologists include:~~

❖ Healthcare: Microbiologists who work in healthcare settings, such as ~~hospitals-clinics~~ and ~~hospitalsclinics~~, are responsible for identifying and studying microorganisms that cause different types of infections. Additionally, ~~T~~they may ~~also~~ work with other healthcare professionals to develop treatments and preventative measures for infectious diseases.

❖ Research: Microbiologists who work in research settings, such as universities/ institutes or government agencies, are responsible for conducting experiments and studying microorganisms to advance our understanding of the natural world. Additionally, ~~T~~they may ~~also~~ work on developing new treatments or technologies that can be used in medicine or other fields.

❖ Biotechnology: Microbiologists who work in the biotechnology industry are responsible for using microorganisms to ~~produce a variety of products, such as drugs, food, and industrial chemicals~~ make a range of goods, including drugs, foods, and industrial chemicals. They may also ~~work focus~~ on developing new technologies and techniques ~~for manipulating~~ in order to manipulate microorganisms for use in biotechnology.

❖ Environmental science: Microbiologists who work in environmental science are responsible for studying the role of microorganisms in ~~various~~ several ecological systems, ~~such as including~~ soil, water, and air. They may also ~~work focus~~ on developing technologies and techniques for managing microorganisms in the environment.

Microbiologists work in ~~a variety of different~~ many diverse settings and specialties, including:

- ❖ Medical laboratories and hospitals
- ❖ Pharmaceutical companies
- ❖ Government agencies.
- ❖ Biotechnology firms
- ❖ Agricultural research labs
- ❖ Food production facilities

Some microbiologists work in highly specialized fields such as mycology (the study of fungi), virology (the study of viruses), or immunology (the study of the immune system). Other microbiologists work in more generalized areas.

### Why Study Microbiology?

- ❖ The Microbiologist course can lead to employment chances for persons with diverse backgrounds, ~~such as including~~ bacteriologists, virologists, cell biologists, mycologists, and many ~~others~~ more.

- ❖ ~~After the B.Sc. in Microbiology study, candidates can continue their studies by enrolling in, M.Sc. Microbiology. Upon completion of the B.Sc. Microbiology program, applicants have the option to pursue an M.Sc. Microbiology to further their education. A postgraduate degree in a Microbiology course improves candidates' job prospects. Similarly, after finishing their M.Sc. in Microbiology, applicants might pursue Ph.D. programs. Similarly, candidates may choose to pursue Ph.D. studies following their completion of an M.Sc. in Microbiology.~~

- ❖ ~~The majority of microorganisms rapidly change their genomic architecture. Most microorganisms undergo fast genetic architecture changes.~~ This creates new research opportunities. Microbiology course graduates are always studying microbes to learn more about ~~better understand~~ the next wave of infectious diseases, the environmental impact of bacteria, the effect of microbes on food products, and so on.

### Higher Studies

The subject of microbiology is not only limited to our country but also has a good reputation abroad. There are also opportunities to do PhD abroad. That is why international famous universities such as Ohio State University, Harvard University, Cape Town University, Victoria University, and University of Georgia as well as world-famous universities like China, Japan, Korea, and Australia

should be contacted. In terms of communication, the competent faculty of **Shaheed Shamsuddoha Institute of Biosciences** will provide comprehensive support.

### **Income**

Studying microbiology has very little chance of being unemployed or not getting a job. Both the job and salary are good here. Those who work in research institutes like ICDDRB or IEDCR have high salaries. Also, standard salary is available in organizations like chemical, and diagnostic research centers. There is an opportunity to earn lakhs of money per month by utilizing experience and skills.

### **Carrier Opportunities**

Generally, a microbiologist starts his career at entry level as a research assistant, and after four to five years of work, a microbiologist is likely to be promoted to team leader. Based on experience, many also work as consultants on large projects. At this stage, a microbiologist's monthly income is prohibitive compared to the demand.

**Scope in Bangladesh:** Microbiology is concerned with numerous disciplines, including chemical technology, pharmacy, medicine, various fields such as medicine, pharmacy, chemical technology, and many more. Students of Microbiology can become microbiologists, mycologists, professors or lecturers, clinical research technicians, etc. Microbiology students can go on to work as professors or lecturers, mycologists, microbiologists, clinical research technicians, etc. in Bangladesh. Students after graduation can also work in different clinical laboratories and hospitals. Owing to this, more and more candidates are trying to get enrolled in microbiology departments. As a result, an increasing number of candidates are trying to enroll in programs in microbiology. In the times to come, the job openings in this industry can further increase manifolds. So, just get admission to **Shaheed Shamsuzzoha Institute of Biosciences, Rajshahi**, and start your pursuit of a better, brighter future.