

The Basics of Microbiology

Duration: 5 Days

Language: en

Course Code: IND05-136

Objective

Upon completion of this course, participants will be able to:

- Understand the importance of comprehending the basics of microbiology within an organisation.
- Identify the purpose of microbiology competency within health and business.
- Identify the different types of microbes and their typical cell structures.
- Examine the different components of a microbe and how their specific adaptations allow it to survive and thrive.
- Explore the theories of microbial diversity.
- Assess how microbes interact with the human body and the potential negative consequences.
- Evaluate the process of immunity and immune response within plants, humans, and animals.
- Analyse the process of creating a vaccine for different types of pathogens.

Audience

This course is designed for anyone within an industry who would benefit from knowledge surrounding microbiology and the spread of disease. It would be most beneficial for:

- Horticultural Operations Managers
- Field Managers
- Food Production Directors
- HSE Officers
- Quality Control Managers
- Microbiology Consultants

Training Methodology

This course uses a variety of adult learning styles to aid full understanding and comprehension. Participants will review samples of different types of cells under a microscope to identify their unique characteristics and categorise them.
The participants will be provided with all the tools and equipment needed to participate in the learning methods and exercises, which include seminars, demonstrations, group activities, and individual exercises. This combination of learning methods ensures that the participants can develop a full and in-depth understanding of the taught content and related practical skills.

Summary

Understanding the basics of microbiology is crucial in various industries, including healthcare, agriculture, and food production. These industries manage either people, animals, or plants in a situation where they may be exposed to disease-causing pathogens. To ensure the health of employees and consumers of products, they will need to take precautions and manage the environment effectively to prevent the spread of disease, and that prevention starts with an understanding of the microbes themselves.
There are many different types of microbes, all with unique traits that have evolved over millions of years to aid in their survival. It is important to assess these unique traits as they dictate the purpose of the organism and how it chooses to survive. These organisms often search out hosts to aid in their lifecycle and to help protect the potential host, either a human, animal, or plant; those responsible will need to be knowledgeable of the steps to

take.
Furthermore, a major topic of microbiology is how the host responds to infection. Understanding the different aspects of the host's immune system and how these work together to fight foreign pathogens and preserve health is vital.

Course Content & Outline

Section 1: **Introduction to Microbiology**

- Defining what microbiology is and its relevance within healthcare and business.
- How the knowledge of microbiology has evolved over time, alongside various medical/scientific breakthroughs.
- Explaining the role of microbiology within nature and its necessity for the survival of different ecosystems.
- Exploring different tools and equipment used to examine microbes and how to use them.

Section 2: **Cell Structure and Organisation**

- Recognising the two types of cells – prokaryote and eukaryote.
- Describing the different structure and components of a prokaryotic cell – pilus, cell wall, plasma membrane, flagelli, and more.
- Evaluating how the adaptations of prokaryotic cells lead to their survival and exploring their limitations.
- Explaining the various structures and components of eukaryotic cells – mitochondria, nucleoplasm, nucleus vacuole, and more.
- Analysing the adaptations of different eukaryotic cells and how these benefit their survival.

Section 3: Prokaryote and Eukaryote Diversity

- Understanding the classification of prokaryotes and eukaryotes.
- Identifying the three classifications of cells and how their unique traits distinguish them – Bacteria, Archaea, and Eukaryotes.
- Recognising the different sub-categories of eukaryotes and their role within the environment and ecosystems – animals, plants, fungi, and protists.
- Understanding the place of viruses within nature and how they are unique from other types of cells.

Section 4: **The Interaction of Microbes and Humans**

- Investigating the life cycles of different types of cells and how they have adapted this

method.
- The role of hosts within the microbial lifecycle.
- Assessing the progress of an infection depending on the type of pathogen causing it.
- What common diseases and illnesses are caused by different pathogens.
- How pathogens can impact fauna.

Section 5: **Immunity and Vaccinations**

- How the human body and plants respond to foreign pathogens.
- Comparing the different roles of the innate immune system and the adaptive immune system.
- The different aspects of the human system and their role for fighting infection – antibodies, lymphatic system, white cells and more.
- Comprehending the process of creating a vaccine and how it takes advantage of the body's immune system.

Certificate Description

Upon successful completion of this training course, delegates will be awarded a Holistique Training Certificate of Completion. For those who attend and complete the online training course, a Holistique Training e-Certificate will be provided.

Holistique Training Certificates are accredited by the British Assessment Council (BAC) and The CPD Certification Service (CPD), and are certified under ISO 9001, ISO 21001, and ISO 29993 standards.

CPD credits for this course are granted by our Certificates and will be reflected on the Holistique Training Certificate of Completion. In accordance with the standards of The CPD Certification Service, one CPD credit is awarded per hour of course attendance. A maximum of 50 CPD credits can be claimed for any single course we currently offer.

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Tags

Healthcare, Biology, Medicine, Microbiology

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