Adyapan School

Microbiology

Duration - 2 months

Industry Certification

Skill India Certified

250+ Partner Companies

Adyapan School

From bacteria to viruses Master microbiology.

From microbes to real-world impact - become industry-ready.

This immersive Microbiology program takes you beyond foundational concepts into real-world laboratory and applied microbiology workflows. Learn microbial physiology, culturing techniques, staining methods, identification and antimicrobial testing through guided case studies. With a strong focus on practical application and industry-relevant practices, you'll graduate with the ability to analyze microorganisms, interpret laboratory results, and contribute confidently to healthcare, biotechnology, and environmental microbiology domains.

8	30+	20,000+
MODULES	PROGRAM OFFERINGS	STUDENTS

250+ PARTNERED COMPANIES

SUN PHARMA · Apollo Health and Lifestyle Ltd · Dr.Reddy

adyapanschool.com

Adyapan School

ABOUT ADYAPAN SCHOOLS

Where education meets real-world impact

Not just a course — a platform to launch your career.

Adyapan Schools was built with a single conviction: learning works best when it happens in the real world. We partner with top companies, mentors, and industry platforms to ensure every student graduates with a portfolio of work that speaks louder than a certificate.

Our programs combine rigorous coursework with live client projects, giving you the skills and proof-of-work that employers actually want.

MISSION

To equip ambitious learners with practitioner-level digital marketing skills through mentor-led, project-based education that bridges the gap between learning and earning.

VISION

To be India's most trusted launchpad for the next generation of marketing leaders — defined not by degrees but by the real work.

Adyapan School

Everything you need to grow fast

PROGRAM HIGHLIGHTS

Live Industry Projects

Work on campaigns for real brands alongside your coursework. Build portfolio projects that prove your expertise to employers.

1-on-1 Mentorship

Dedicated mentors from Google, Microsoft, Mastercard and more. Get personalized guidance and industry connections.

AI-Powered Marketing

Learn cutting-edge AI tools alongside evergreen fundamentals. Stay ahead of the curve in a rapidly evolving landscape.

Dual Certification

Earn both a Course Completion and Internship Certificate — accredited by Skill India Digital Hub and NSDC.

Internship Guarantee

Graduate with an internship completion certificate from a live brand project. Concrete, resume-ready proof of work.

Industry Network

Join a network of alumni at Amazon, Google, Adobe, Microsoft. Access exclusive hiring events and referral opportunities.

Adyapan School

CURRICULUM

8 weeks. 8 modules. Infinite impact.

WEEK 1

Introduction to Microbiology & the Microbial World

- Discussion of curriculum
- History and scope of microbiology: from the early microscopy of Leeuwenhoek and the germ theory of Pasteur and Koch through the golden age of discovery to the modern molecular era
- Classification and taxonomy of microorganisms and the defining features of bacteria, archaea, fungi, viruses, protozoa, and helminths
- Microscopy principles and applications; Gram staining and other differential staining techniques
- Culture media preparation and microbial growth techniques

WEEK 2

Microbial Chemistry, Cell Biology & Genetics Foundations

- Fundamental chemistry for microbiology: atomic structure, chemical bonding, reaction types, the unique properties of water, and the four classes of biomolecules
- Eukaryotic cell structure and function
- Cell division: mitosis and meiosis, their molecular regulation, and their relevance to microbial reproduction and genetic diversity
- Microbial metabolism: catabolic and anabolic pathways, enzyme kinetics, metabolic regulation, and fermentation as a model for microbial energy production

WEEK 3

Microbial Genetics & Molecular Biology

- DNA structure, replication, and the central dogma: transcription and translation mechanisms in both prokaryotes and eukaryotes
- Genetic mutations; genetic recombination and the role of plasmids in horizontal gene transfer
- Core molecular techniques: PCR, gel electrophoresis, DNA extraction, cloning, and an introduction to bioinformatics tools for sequence analysis
- Recombinant DNA technology: restriction enzymes, transformation, vector design, and applications in microbial engineering and bioproduct development

CURRICULUM

8 weeks. 8 modules. Infinite impact.

WEEK 4

Environmental, Food & Industrial Microbiology

- Role of microbes in ecosystems and biogeochemical cycles
- Food and dairy microbiology: fermentation science, spoilage organisms, pathogen control, and the microbial standards governing food safety in production and processing
- Industrial applications of microorganisms: biofuels, enzymes, antibiotics, biofertilizers, and biopesticides produced through microbial fermentation and genetic engineering
- Microbial quality control in pharmaceutical and food industries

WEEK 5

Medical Microbiology & the Immune System

- Microbes as pathogens; host-pathogen interactions, virulence factors, and routes of transmission
- The first and second lines of defense: physical and chemical barriers, the inflammatory response, fever, complement activation, and the critical role of phagocytes and natural killer cells
- Innate and adaptive immunity
- Antigen-antibody interactions and immunoassays: antibody structure and function, ELISA, immunofluorescence, and their diagnostic applications in clinical microbiology

WEEK 6

Immunological Disorders, Epidemiology & Biosafety

- Vaccine development and immunization strategies: active vs. passive immunity, adjuvants, types of vaccines and global immunization programs
- Hypersensitivity reactions and autoimmune disorders: the four types of hypersensitivity, mechanisms of self-tolerance failure and HIV as an immunodeficiency model
- Epidemiology of infectious disease: disease surveillance, outbreak investigation, basic reproductive number (R_0), herd immunity thresholds
- Biosafety levels and regulatory requirements for working with infectious agents

Adyapan School

CURRICULUM

8 weeks. 8 modules. Infinite impact.

WEEK 7

Viral & Bacterial Pathogens

- Viral pathogens by system: hepatitis viruses, skin and nervous system viruses, respiratory viruses, and sexually transmitted viral infections
- Prokaryotic cell structure and genetics: cell wall architecture, cytoplasmic organization, operons, and genetic recombination mechanisms of bacteria
- Bacterial pathogens by system: organisms affecting the skin, eyes, cardiovascular system, nervous system, respiratory tract, gastrointestinal system, and reproductive tract
- Eukaryotic pathogens: clinically significant fungal pathogens, protozoan parasites, and helminths

WEEK 8

Antimicrobials, Microbial Genomics & Career Pathways

- Antibiotics and antimicrobial agents, and the global crisis of antimicrobial resistance and its molecular basis
- Microbial genomics and bioinformatics: genome sequencing and annotation, comparative genomics, phylogenetics, and the use of tools to analyze microbial datasets
- Emerging trends in applied microbiology: synthetic biology, metagenomics, AI applications in biotech, and industrial case studies in antibiotics, enzymes, and biofuels
- Capstone project

Adyapan School

WHO THIS IS FOR

This course is perfect for

- Students & Career Switchers
- Aspiring Microbiologists & Research Professionals
- Biotechnology, Microbiology & Life Science Students
- Lab Technicians & Researchers (Clinical & Industrial Microbiology)
- Healthcare, Pharma & Food Industry Professionals
- Infectious Diseases, Immunology & Environmental Microbiology Enthusiasts

CERTIFICATIONS

ALUMNI NETWORK

Our alumni work at world-class companies

Amazon | Adobe | Google | Autodesk | Microsoft | Deloitte

Your career switch is one click away.

Ready to begin? Apply at adyapanschool.com or email us at support@adyapan.com

Apply Now