



# **BIOMEDICAL SCIENCES COURSE SYLLABUS**

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**Engineered for skill enhancement.**



# PROGRAM HIGHLIGHTS

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✓ **Accredited Certification:**

- Industry-recognized and ISO-certified training program

✓ **Internships:**

- Real-world exposure through lab internships and hospital-based projects

✓ **Placement Assistance:**

- Dedicated support for resume building, mock interviews, and job referrals

✓ **Basic to Advanced Level Training:**

- Taught by experienced biomedical professionals and academic experts

✓ **Live & Recorded Lectures:**

- Ideal for both students and working professionals with flexible access

✓ **Capstone Projects:**

- Hands-on research, diagnostics, and clinical case-based assignments





# ABOUT US

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- **OUR MISSION :**

**NxtSync** is a forward-thinking EdTech company aiming to bridge the gap between healthcare knowledge and coding expertise. We empower learners with job-ready skills in medical coding to meet the growing demand in the healthcare industry.

- **OUR VISION--UPSKILL:** Shaping future-ready coders
- **INNOVATE:** Integrating technology with healthcare education
- **EXCEL:** Producing globally certified professionals



## WHY BIOMEDICAL SCIENCES?

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- Integral to clinical research, diagnostics & healthcare innovations
- Opportunities in hospitals, pharma, diagnostics, and R&D labs
- Foundation for advanced careers (MD, PhD, MSc) and international study
- High demand for biomedical professionals in government & private sectors
- Roles in medical writing, lab technology, public health, and biotech





# LEARNING PATH

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- Introduction to Biomedical Sciences
- Human Anatomy & Physiology
- Medical Biochemistry
- Microbiology & Immunology
- Pathology & Pharmacology
- Biomedical Instrumentation
- Research Methodology & Biostatistics
- Bioethics & Regulatory Guidelines
- Capstone Project & Research Simulation



# DETAILED MODULE BREAKDOWN

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## **Module 1: Introduction to Biomedical Sciences**

- Role of Biomedical Sciences in Healthcare
- Overview of Allied Health Professions
- Emerging Fields: Genomics, AI in Healthcare

## **Module 2: Anatomy & Physiology**

- Human Body Systems
- Histology & Organ Functions
- Clinical Case Correlations





### **Module 3: Medical Biochemistry**

- Biomolecules (Proteins, Carbs, Lipids, Nucleic Acids)
- Enzymes, Metabolism, Vitamins
- Diagnostic Biochemistry

### **Module 4: Cell & Molecular Biology**

- Cell Structure & Functions
- DNA/RNA Synthesis, Gene Expression
- Recombinant DNA Technology

### **Module 5: Microbiology & Immunology**

- Microbial Classification & Pathogens
- Infection Control & Antimicrobial Agents
- Immunity, Vaccines, Diagnostic Tests



## **Module 6: Pathology & Pharmacology**

- Mechanisms of Disease
- General & Systemic Pathology
- Drug Mechanisms, Interactions, and Adverse Reactions

## **Module 7: Biomedical Instrumentation**

- Imaging Techniques (MRI, CT, Ultrasound)
- Diagnostic Devices (ECG, Glucometers, etc.)
- Calibration & Maintenance

## **Module 8: Research & Biostatistics**

- Study Designs & Hypothesis Testing
- Data Analysis, SPSS/Excel Use
- Clinical Trials & Evidence-Based Medicine





## **Module 9: Bioethics & Regulatory Affairs**

- Ethical Issues in Human/Animal Research
- GCP, ICMR, WHO Guidelines
- Consent, Confidentiality, & Data Security

## **Module 10: Capstone Project**

- Case Study on Disease Diagnosis
- Lab Report or Research Proposal
- Viva Presentation & Peer Review



## ASSIGNMENT'S & ASSESSMENTS

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- ✓ Weekly quizzes, lab-based assignments
- ✓ Mid-module evaluations & clinical case presentations
- ✓ Final Capstone Project with mentorship
- ✓ Interview prep & soft-skills training





# TOOLS & FRAMEWORKS USED

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- Laboratory Simulation Tools (e.g., Labster, Virtual Labs)
- Data Analysis Software (SPSS, Excel)
- Diagnostic Instruments (e.g., Microscopes, Spectrophotometers)



## RECOMMENDED READING

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- "Human Physiology" – Guyton & Hall
- "Lehninger Principles of Biochemistry" – Nelson & Cox
- "Robbins Basic Pathology" – Kumar, Abbas & Aster
- "Essentials of Medical Microbiology" – Apurba Sastry
- "Textbook of Immunology" – Kuby
- "Biomedical Instrumentation and Measurements" – Cromwell





# WHY CHOOSE NXTSYNC?

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- ✿ Globally aligned curriculum
- ✿ Interactive labs & diagnostic training
- ✿ Academic + Industry mentorship
- ✿ Career pathways in research, diagnostics, biotech, and public health



THANK YOU

