Prospectus

MSc in Bioinformatics

School of Engineering
Faculty of Science and Technology
Pokhara University

Program Overview

- **Duration**: 2 Years (4 Semesters)
- **Total Credit Hours**: 60
- **Program Type**: Full-time, interdisciplinary

Focus: Computational biology, omics science, algorithmic analysis, and research skills

Program Coordinator

Madan Baral
Assistant Professor, Pokhara University
MSc Bioinformatics, The University of Texas at El Paso

Foreword from the Program Coordinator

It is my great pleasure to welcome you to Nepal's **first MSc program in Bioinformatics**, launched under the Faculty of Science and Technology at **Pokhara University**.

Bioinformatics is a revolutionary field that brings together the power of **life sciences, computer science, mathematics, and data analytics** to solve some of the most complex problems in biology and medicine. From genome sequencing to drug discovery, bioinformatics is now a key driver of innovation in **healthcare, biotechnology, agriculture, and environmental sciences**.

This program is more than just an academic qualification—it is a **transformational interdisciplinary degree** designed to equip students with **globally relevant skills** in a fast-changing analytical world.

At Pokhara University, our **priority is to foster excellence, innovation, and international standards in education and research**. With dedicated faculty, a progressive curriculum, and state-of-the-art computational and molecular biology tools, this program aims to produce highly competent graduates ready to take on the global challenges in science and technology.

I invite aspiring students, researchers, and collaborators to become part of this exciting journey.

Warm regards,
Madan Baral
Program Coordinator

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Career Opportunities

Graduates can pursue roles in:

- Universities & Higher Education
- Bioinformatics & Genomics Research Centers
- Pharmaceutical & Biotech Companies
- Hospitals and Diagnostic Laboratories
- Public Health and Epidemiology Units
- IT/Data Science Sectors
- Agriculture & Environmental Genomics
- Government and NGO-led Health Projects
- Biomedical and Translational Research
- National and International Biological Databases

Research Themes

- RNA/DNA Sequence Analysis
- Protein Structure Prediction
- Molecular Dynamics & Drug Design
- Machine Learning in Genomics
- Systems Biology & Network Modeling
- Gene Expression Profiling
- Next Generation Sequencing (NGS) Data Analysis
- Structural Bioinformatics

Curriculum Structure

Semester I

Code	Course Title	Credits
MTH501	Mathematics and Algorithm for Bioinformatics	3
BST501	Biostatistics	3
BIN501	Bioinformatics I: Introduction	3
CMS501/CMB501	Elective I (Computer Science / Cell Biology)	3
BIN540	Molecular Genetics	3
	Total	**15**

Semester II

Code	Course Title	Credits
BIN551	Bioinformatics II	3
BIN552	Programming for Bioinformatics	3
BIN553	Molecular Biochemistry	3
CMB552	Functional Genomics	3
RES551	Directed Research I	3
	Total	**15**

Semester III

Code	Course Title	Credits
BIN601	Bioinformatics III	3
BIN602	Data Warehouse and Data Mining	3
BIN603	Molecular Modeling and Drug Design	3
CMB601/BIN606	Elective II (Population Genomics / Medical Informatics)	3
RES601	Directed Research II	3
	Total	**15**

Semester IV

Code	Course Title	Credits
BIN699	Thesis	15

Elective Options

- **Elective I (Semester I)**:
    - CMB501: Cell Biology (for non-biology background)
    - CMS501: Computer Science (for non-computer background)
- **Elective II (Semester III)**:
    - CMB601: Population and Evolutionary Genomics
    - BIN606: Medical Informatics and Translational Research